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ANALYTICAL DATA REPORT
FOR
THE NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION
GEOENGINEERING, INC.

BUREAU OF
FEDERAL
JAN 30 1990

Project Name: LEC-geomons

NJ DEP Certification No. 59445

Enseco Incorporated
205 Alewife Brook Parkway
Cambridge, MA 02138
617/661-3111 Fax: 617/354-5258

346319

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SAMPLE DESCRIPTION INFORMATION
for
GeoEngineering, Inc.

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
004858-0001-SA	LEC-MW-1	AQUEOUS	01 NOV 89	14:55	03 NOV 89
004858-0002-SA	LEC-MW-2	AQUEOUS	01 NOV 89	14:35	03 NOV 89
004858-0003-SA	LEC-MW-3	AQUEOUS	01 NOV 89	14:20	03 NOV 89
004858-0004-SA	LEC-MW-4	AQUEOUS	01 NOV 89	14:05	03 NOV 89
004858-0005-SA	LEC-MW-5	AQUEOUS	01 NOV 89	13:45	03 NOV 89
004858-0006-SA	Trip blank	AQUEOUS	01 NOV 89		03 NOV 89

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The New Jersey Department of Environmental Protection
Contractor: Enseco - Erco Laboratory
Project Name: LEC-geomons

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Section III: Sample Data and Quality Control Data (Method Blanks and Duplicate Control Samples)

1. Analytical Data Sheets
2. Chromatograms, Quant Reports, and Library Searches (if applicable)

Client ID	Erco ID	
LEC-MW-1	4858-01	31
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The New Jersey Department of Environmental Protection
Contractor: Enseco - Erco Laboratory
Project Name: LEC-geomans

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LABORATORY DELIVERABLES

THIS FORM MUST BE COMPLETED BY THE LABORATORY OR ENVIRONMENTAL CONSULTANT AND ACCOMPANY ALL DATA SUBMISSIONS

The following laboratory deliverables shall be included in the data submission. All deviations from the accepted methodology and procedures, or performance values outside acceptable ranges shall be summarized in the nonconformance summary. Attachment 2 of the Draft ECRA Sampling Plan Guide (ESPG) provides further details to be followed. The document shall be bound and paginated, contain a table of contents, and all pages shall be legible. Incomplete packages will be returned or held without review until the data package is completed.

Erco Project No. 4858

		Check if Complete
I.	Cover Page, Format, and Laboratory Certification (Include Cross Reference Table of Field I.D. # and Laboratory I.D. #)	✓
II.	Chain of Custody	✓
III.	Laboratory Chronicle and Methodology Summary Including Sampling Holding Time Check	✓
IV.	Initial Calibration and Continuing Calibration	
V.	Tune Summary (MS)	
VI.	Blanks (Method, Field, Trip)	✓
VII.	Surrogate Recovery Summary	✓
VIII.	Chromatographs Labelled/Compound Identification	✓
IX.	Nonconformance Summary	✓
X.	Minimum Detection Limits	
	a. Consistent with Method Guidelines	✓

P.H. / Data Control
Laboratory Manager or Environmental Consultant's Signature

11/20/89
Date

X.	b. Lower Than Action Level if Clean Zone Sample	

Environmental Consultant's Signature

Date

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ANALYTICAL TEST REQUESTS
for
GeoEngineering, Inc.

Lab ID: 004858	Group Code	Analysis Description	Custom Test?
0001 - 0006	A	Method 624 - TCL Volatile Organics Volatile Organics 15 Compound TID	

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Sample Analysis Instrumentation Key for Organics (Page 1 of 2)

ID	Manufacturer	Model	Data System
GC/MS #S-1	Finnigan	4530	INCOS
GC/MS #S-2	Finnigan	4615B	INCOS
GC/MS #S-3	Finnigan	4530	INCOS
GC/MS #S-4	Hewlett Packard	MSD	RTE-A
GC/MS #S-5	Hewlett Packard	MSD	RTE-A
GC/MS #V1*	Hewlett Packard	5996	RTE-6
GC/MS #V2*	Hewlett Packard	5996	RTE-6
GC/MS #V3*	Hewlett Packard	5996	RTE-6
GC/MS #V4*	Hewlett Packard	5985	RTE-6
GC/MS #V5*	Hewlett Packard	MSD	RTE-6
GC/HECD/PID #G1*	Perkin-Elmer/Tracor/HNU	3920/700/PI-52	Beckman CALS/ HP-1000
GC/HECD #G2*	Hewlett Packard/OIC	5890/4420	HP-1000
GC/HECD/PID #G3*	Varian/OIC/HNU	3700/4420/PI-52-02	HP-1000
GC/HECD/PID #G4*	Hewlett Packard/OIC/HNU	5890/4420/PI-52-02	Beckman CALS/ HP-1000
GC/HECD/PID #G5*	Hewlett Packard/OIC/HNU	5890/4420/PI-52-02	Beckman CALS/ HP-1000
GC/FID #G19	Hewlett Packard	5880	Beckman CALS/ HP-1000
GC/ECD #G10	Hewlett Packard	5840	Beckman CALS/ HP-1000
GC/ECD #2	Hewlett Packard	5840	Beckman/HP-1000
GC/ECD #7	Hewlett Packard	5880	Beckman/HP-1000
GC/ECD #9	Hewlett Packard	5880	Beckman/HP-1000
GC/ECD #11	Hewlett Packard	5890	--
GC/ECD #12	Hewlett Packard	5890	--

*Purge-and-trap concentrators manufactured by Tekmar Company.

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Sample Analysis Instrumentation Key for Organics (Page 2 of 2)

ID	Manufacturer	Model	Data System
GC/ECD #13	Hewlett Packard	5890	--
IR1	Perkin-Elmer	701N	--
GC/FID #13	Hewlett Packard	5880	Beckman/HP-1000
GC/FID #18	Hewlett Packard	5880	Beckman/HP-1000
GC/FID #27	Hewlett Packard	5890	Beckman/HP-1000

*Purge-and-trap concentrators manufactured by Tekmar Company.

KEY FOR SURROGATE AND INTERNAL STANDARDS

Acid/Base-Neutral Compounds

a - Fluorophenol	surrogate standard
b - d_5-Phenol	surrogate standard
c - d_4-Dichlorobenzene	internal standard
d - d_5-Nitrobenzene	surrogate standard
e - d_8-Naphthalene	internal standard
f - Fluorobiphenyl	surrogate standard
g - d_{10}-Acenapthene	internal standard
h - Tribromophenol	surrogate standard
i - d_{10}-Phenanthrene	internal standard
j - d_{14}-O-terphenyl	surrogate standard
k - d_{12}-Chrysene	internal standard
l - d_{12}--Perylene	internal standard

Volatile Compounds

1 - Bromochloromethane	internal standard
2 - 1,2-Dichloroethane-d_4	surrogate standard
3 - 1,4-Difluorobenzene	internal standard
4 - Toluene-d_8	surrogate standard
5 - Chlorobenzene-d_5	internal standard
6 - Bromofluorobenzene	surrogate standard

SUMMARY OF METHODS

The analytical EPA Methods 608 (Pesticides/PCBs), 624 (Volatile Organics) and 625 (Base/Neutrals and Acids) are designed to analyze water, sediment, and soil for the organic compounds on the Hazardous Substance List (HSL).

Volatile Organic Compounds

Analyses are conducted using purge and trap gas chromatographic/mass spectrometer (GC/MS) procedure in accordance with EPA Method 624. For sediment/soil samples, the purge device is heated.

Extractable Organic Compounds

Base/Neutrals and Acids (Semivolatiles)

The analyses are conducted in accordance with EPA Method 625. The method involves solvent extraction of the matrix, using a separatory funnel for waters and a sonicator for solids, concentration, and analysis by a GC/MS.

Pesticide/PCBs

The analysis of certain organochloride pesticides and polychlorinated biphenyls is conducted in accordance with EPA Method 608. The method involves solvent extraction of the matrix, concentration, and analysis. The extract is screened on a gas chromatograph/electron capture detector (GC/ECD) using a packed column. The sample is quantitated and confirmed on a GC/ECD using a second packed column.

ANALYTICAL RESULTS

The method number provided on each data report sheet refers to a publication originating from a regulatory or standard-setting organization. In general, the methods employed are those specified by the U.S. Environmental Protection Agency and other state and federal agencies. In cases where an approved regulatory method does not exist, a method developed by Enseco will be employed to meet the specific needs of the client. The methods commonly employed by Enseco are based on methods from the following references.

U.S. Environmental Protection Agency. 1983. Methods for chemical analysis of water and wastes. EPA-600/4-79-020. Cincinnati, OH, March.

U.S. Environmental Protection Agency. 1984. Test methods for evaluating solid waste, physical/chemical methods. (SW-846); Washington, D.C. April.

U.S. Environmental Protection Agency. 1986. Methods for the determination of organic compounds in finished drinking water and raw source water. Cincinnati, OH, September.

"Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act," 40 CFR, Part 136; Federal Register, Vol. 49, No. 209 (1984).

American Public Health Association, American Water Works Association, Water Pollution Control Federation. 1985. Standard methods for the examination of water and wastewater, 16th Edition. Washington, D.C., April.

Current EPA Contract Laboratory Program (CLP) protocols for the analysis of organic and inorganic hazardous substances including chlorinated dioxins and furans.

QUALITY ASSURANCE/QUALITY CONTROL

As an indication of the overall quality of the data generated by Enseco - Erco Laboratory for this report, the following controls have been provided (when applicable).

Method blanks are analyzed to assess the level of contamination which exists in the analytical system. A method blank, analyzed with every batch of samples, consists of reagents specific to the method. This blank is carried through every aspect of the procedure, including preparation, cleanup, and analysis. Ideally, the concentration of an analyte in the blank is below the reporting limit for that analyte. However, some common laboratory solvents and metals are difficult to eliminate to the part-per-billion levels commonly reported in environmental analyses. Therefore, all method blank data is reported to the client. Data are not blank-corrected.

Duplicate control samples (DCS) are used to monitor the laboratory's day-to-day performance of routine analytical methods. A DCS consists of a standard, control matrix which is spiked with a group of target compounds representative of the method analytes. The DCS is analyzed with environmental samples to provide evidence that the laboratory is performing the method within accepted QC guidelines.

A DCS has been established for most routine analytical methods. Reagent water is used as the control matrix for the analysis of aqueous samples. The DCS compounds are spiked into reagent water and carried through the appropriate steps of the analysis. As stated in SW-846 (third edition), a universal blank matrix does not exist for solid samples and therefore no matrix is used. The DCS for solid samples consists of the DCS compounds spiked into a reagent blank and carried through the appropriate steps of the analysis. The data thus obtained are used to set the DCS control limits. As sufficient laboratory data become available, the control limits are redefined based upon the most recent six months of DCS data. Control limits for accuracy are based on the historical average recovery of the DCS plus or minus three standard deviation units, or alternatively on established control limits defined in the methodology.

Surrogates are organic compounds that are similar to the analytes of interest in chemical behavior but which are not normally found in environmental samples. Enseco routinely adds surrogates to samples requiring GC/MS and most GC analysis and reports these surrogate recoveries to the client. These surrogates are added to samples to monitor the effect of the matrix on the accuracy of the analysis. Results are reported in terms of percent recovery.

Two

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GC/MS ANALYSIS CONFORMANCE/NONCONFORMANCE SUMMARY

Erco Project No. 4858

	No	Yes
1. GC/MS Tune Specifications		
a. BFB passed		✓
b. DFTPP passed	NA	
2. GC/MS Tuning Frequency - Performed every 12 hours		✓
3. GC/MS Calibration - Initial Calibration performed within 30 days before sample analysis and continuing calibration performed within 24 hours before sample analysis		✓
4. GC/MS Calibration Requirements		
a. Calibration Check Compounds		✓
b. System Performance Check Compounds		✓
5. Blank Contamination - List compounds for each fraction		
a. VOA Fraction: SEE METHOD BLANK SUMMARY		
b. B/N Fraction: NA		
c. Acid Fraction: NA		
6. Surrogate Recoveries Meet Criteria (If criteria not met, list those compounds and their recoveries which fall outside the acceptable range)		✓
a. VOA Fraction		
b. B/N Fraction: NA		
c. Acid Fraction: NA		
7. Extraction Holding Time Met	NA	
Comments:		
8. Analysis Holding Time Met		✓
Comments:		

9. Additional Comments:

Laboratory Manager: P. Hess Date: 11/20/89

METHOD BLANK SUMMARY

Case No. GeoEngineering Region — Contractor Enviro Tech Laboratory Contract No. —

FILE ID	DATE OF ANALYSIS	FRACTION	MATRIX	CONC. LEVEL	INST. ID	CAS NUMBER	COMPOUND (HSL, TIC OR UNKNOWN)	CONC.	UNITS	~~CRQL~~ RL
07 Nov 89 V5B	11/07/89	VOA	Aqueous	Low	GCMS V5	75-09-2	METHYLENE CHLORIDE	14	ug/L	5
↓	↓	↓	↓	↓	↓	67-64-1	ACETONE	6.1	↓	10
08 Nov 89 V3A	11/08/89	VOA	Aqueous	Low	GCMS V3	75-09-2	METHYLENE CHLORIDE	5.4	ug/L	5
↓	↓	↓	↓	↓	↓	67-64-1	ACETONE	7.7	↓	10

Comments: RL = REPORTING LIMIT

ph 11/20/89

5A
VOLATILE ORGANIC GC/MS TUNING AND MASS
CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: Grec

Lab Code: ENSECO Case No.: 4858 SAS No.: _____ SDG No.: _____

Lab File ID: >A352 BFB Injection Date: 11/03/89

Instrument ID: V3 BFB Injection Time: 15:12

Matrix: (soil/water) water Level: (low/med) low Column: (pack/cap) cap

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	24.1
75	30.0 - 60.0% OF MASS 95	47.6
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.2
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	78.1
175	5.0 - 9.0% of mass 174	6.1(7.8)1
176	Greater than 95.0%, but less than 101.0% of mass 174	74.9(95.8)1
177	5.0 - 9.0% of mass 176	4.9(6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB_50ng	A352	11/3/89	15:12
02	VSTD050	50~~ppb STD~~			
03	~~VBLK~~	~~Proc Blank~~			
04	VSTD050	50 ppb STD	A354		~~19:10~~ 18:17
05	VSTD020	20 ppb STD	A355		19:10
06	VSTD100	100 ppb STD	A356		20:04
07	VSTD150	150 ppb STD	A357		21:17
08	VSTD200	200 ppb STD	A358		22:46
09					
10					
11					
12					
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14					
15					
16					
17					
18					
19					
20					
21					
22					

(3)

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: Geo

Lab Code: ENSECO Case No.: 4858 SAS No.: _____ SDG No.: _____

Lab File ID: >A408 BFB Injection Date: 11/08/89

Instrument ID: V3 BFB Injection Time: 9:16

Matrix: (soil/water) water Level: (low/med) low Column: (pack/cap) cap

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	20.5
75	30.0 - 60.0% OF MASS 95	40.5
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0.00 (0.0)1
174	Greater than 50.0% of mass 95	99.6
175	5.0 - 9.0% of mass 174	7.4 (7.5)1
176	Greater than 95.0%, but less than 101.0% of mass 174	99.2 (99.6)1
177	5.0 - 9.0% of mass 176	6.2 (6.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MB, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB_50ng	A408	11/8/89	9:16
02	VSTD050	50ppb_STD	A409	↓	10:10
03	VBLK	Proc_Blank	A410	↓	11:21
04					
05					
06	LEC-MW-2	4858-02	A414	11/8/89	14:34
07	↓ -4	↓ -04	A415	↓	15:14
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

12

FORM V OOA 1/87 Rev.

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: Geo

Lab Code: ENSECO Case No.: 4858 SAS No.: _____ SDG No.: _____

Lab File ID: >GV074 BFB Injection Date: 10/24/89

Instrument ID: V5 BFB Injection Time: 11:58

Matrix: (soil/water) water Level: (low/med) low Column: (pack/cap) pack

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	32.2
75	30.0 - 60.0% OF MASS 95	53.8
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	7.4
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	58.2
175	5.0 - 9.0% of mass 174	4.1(7.0)1
176	Greater than 95.0%, but less than 101.0% of mass 174	56.7(97.4)1
177	5.0 - 9.0% of mass 176	4.3(7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB_50ng	GV074	10/24/89	11:58
02	~~VSTD050~~	~~50ppb STD~~			
03	~~VBLK~~	~~Proc Blank~~			
04	VSTD020	20 ppb STD	GV078	10/24/89	16:08
05	050	50 ppb STD	079		16:58
06	100	100 ppb STD	080		17:45
07	150	150 ppb STD	081		18:32
08	200	200 ppb STD	082		19:19
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ENSECO-ERCO LABORATORY Contract: Geo

Lab Code: ENSECO Case No.: 4858 SAS No.: _____ SDG No.: _____

Lab File ID: >GV279 BFB Injection Date: 11/07/89

Instrument ID: V5 BFB Injection Time: 17:25

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) PACK

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% OF MASS 95	28.6
75	30.0 - 60.0% OF MASS 95	55.0
95	Base peak, 100% relative abundance	100.
96	5.0 - 9.0% of mass 95	9.0
173	Less than 2.0% of mass 174	0.0(0.0)1
174	Greater than 50.0% of mass 95	63.3
175	5.0 - 9.0% of mass 174	5.1(8.1)1
176	Greater than 95.0%, but less than 101.0% of mass 174	61.9(97.8)1
177	5.0 - 9.0% of mass 176	4.6(7.5)2

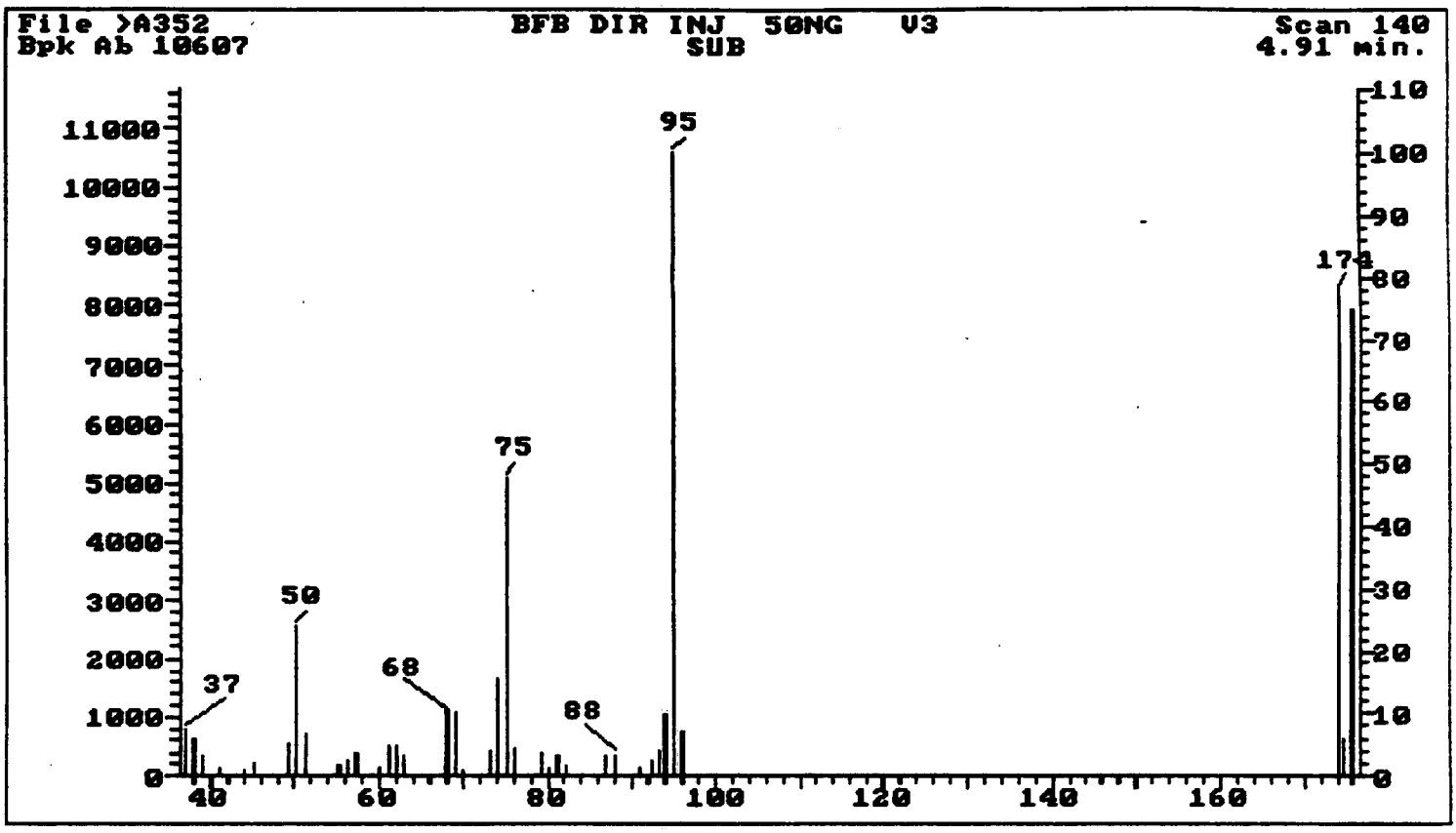
1-Value is % mass 174 2-Value is % mass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		BFB_50ng	GV279	11/7/89	17:25
02	VSTD050	50ppb_STD	GV280	↓	17:51
03	VBLK	Proc_Blank	GV282	↓	20:17
04					
05	LEC-mw-1	4858-01	GV283	11/7/89	21:30
06	↓ -~~02~~ 3	↓ -02	GV285	↓	23:04
07	↓ -~~03~~ 5	-03	GV287	11/8/89	00:37
08	Triplank	↓ -06	GV288	↓	01:34
09	↓ -~~5~~ 6				
10	~~triplank~~				
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

1/3 m 5

14



MS data file header from : >A352

Sample: BFB DIR INJ 50NG Operator: GREG MS 11/03/89 15:12
Misc : V3
Sys. #: 1 MS model: 96 SW/HW rev.: IA ALS # : 0
Method file: BFB3 Tuning file: MT7403 No. of extra records: 2
Source temp.: 220 Analyzer temp.: 220 Transfer line temp. : 220

Chromatographic temperatures :	90.	90.	0.	0.	0.
Chromatographic times, min. :	.1	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	.1	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

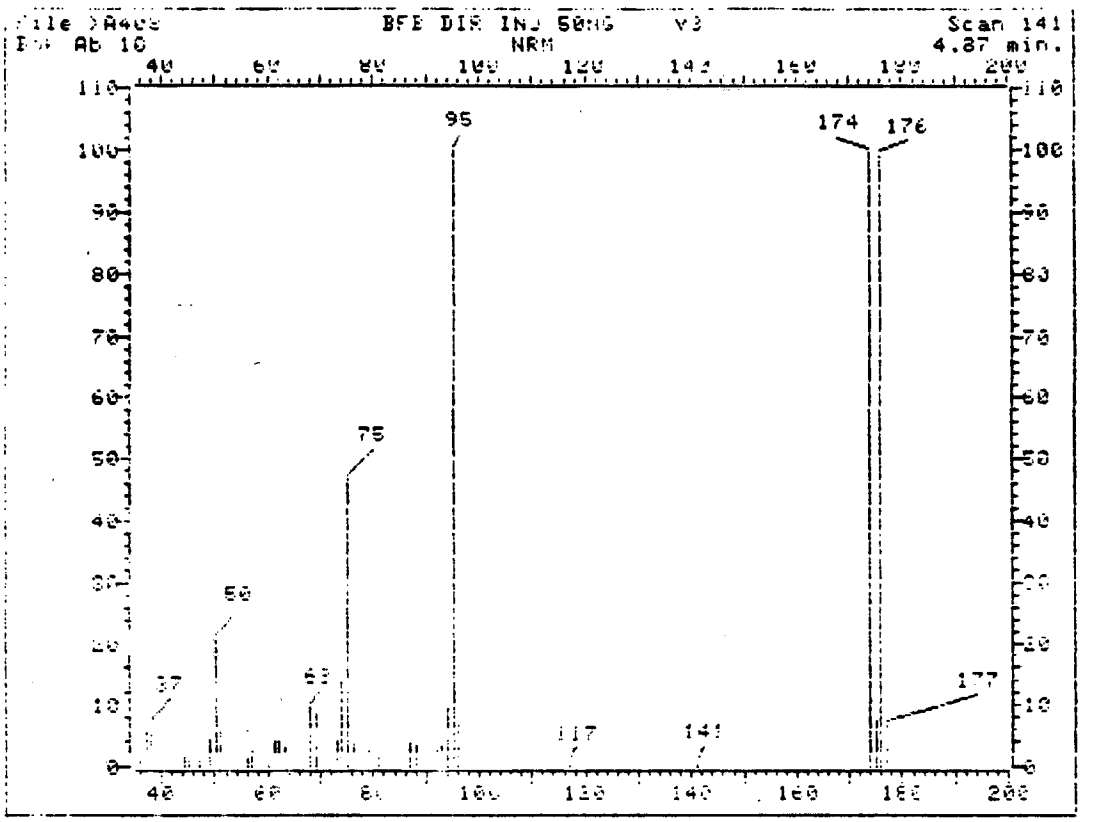
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	24.14	24.14	Ok
75	30-60% of mass 95	47.63	47.63	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.25	7.25	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	78.12	78.12	Ok
175	5-9% of mass 174	6.13	7.84	Ok
176	95-101% of mass 174	74.87	95.84	Ok
177	5-9% of mass 176	4.88	6.52	Ok

Injection Date: 11/03/89
Injection Time: 15:12
Data File: >A352
Scan: 140
Name:BFB DIR INJ 50NG
Misc:V3

>A352 BFB DIR INJ 50NG V3
140 SUB NRM

File: >A352 Scan #: 140 Retn. time: 4.91

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
36.20	1.292	50.10	24.144	63.10	3.149	79.10	3.583	93.15	3.941
37.10	7.504	51.20	6.647	68.10	10.380	80.10	1.405	94.05	9.777
38.10	6.005	55.20	1.763	69.10	10.229	81.05	3.394	95.05	100.000
39.20	3.130	56.10	2.329	70.10	1.122	82.05	1.622	96.05	7.250
41.10	1.235	57.10	3.601	73.10	4.195	86.95	3.385	174.00	78.118
43.20	.141	60.10	1.244	74.20	15.584	88.05	3.413	175.00	6.128
44.10	.641	61.20	4.846	75.10	47.629	91.05	1.367	176.00	74.866
45.10	1.923	62.10	4.695	76.10	4.346	92.15	2.508	176.90	4.884
49.20	5.053								



Fi dr s file header from : >A406

Sample: BFB DIR INJ 50NG Operator: GRCG MS 11/08/89 9:16
M sc : V3
S. s. #: 1 MS model: 90 SW/HW rev.: 1A ALS # : 0
Method file: BFB3 Tuning file: MT7-03 No. of extra records: 2
Source temp.: 220 Analyzer temp.: 220 Transfer line temp. : 220

Chromatographic temperatures :	90.	90.	0.	0.	0.
Chromatographic times, min. :	.1	10.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	.1	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	20.54	20.54	OK
75	30-60% of mass 95	46.55	46.55	OK
95	base peak, 100% relative abundance	100.00	100.00	OK
96	5-9% of mass 95	6.63	6.63	OK
173	Less than 2% of mass 174	0.00	0.00	OK
174	Greater than 50% of mass 95	99.64	99.64	OK
175	5-9% of mass 174	7.44	7.46	OK
176	95-101% of mass 174	99.21	99.57	OK
177	5-9% of mass 176	6.73	6.78	OK

Injection Date: 11/08/89
Injection Time: 09:16
Data File: >A400
Scan: 141
Name:BFB DIR INJ 50NG
Misc:U3

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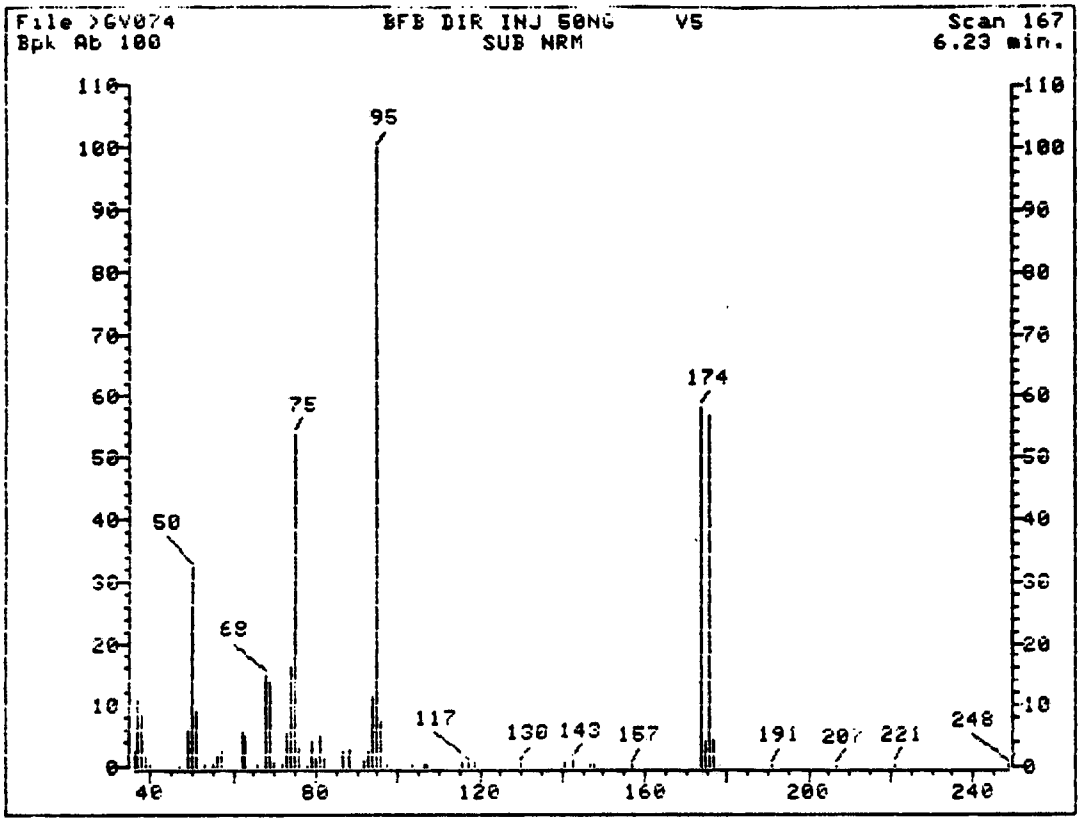
141 BFB DIR INJ 50NG U3
RAM

File: >A400 Scan #: 141 Retn. time: 4.87

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
36.10	1.367	49.10	4.278	63.10	3.046	79.00	2.425	95.05	100.000
37.10	6.056	50.10	20.539	68.10	9.625	80.00	.786	96.05	6.627
38.10	5.489	51.10	6.123	69.10	8.833	80.95	2.157	116.95	.527
39.10	1.965	56.10	1.425	70.00	.746	87.05	3.572	140.90	.674
40.10	1.742	57.10	2.474	73.10	3.957	88.05	3.421	173.90	99.642
44.10	1.572	60.10	.933	74.10	14.059	92.05	2.237	175.00	7.436
45.10	1.255	61.10	4.095	75.10	46.548	93.05	3.470	175.90	99.214
47.10	1.188	62.10	3.952	76.10	3.948	94.05	9.508	176.90	6.726



MS data file header from : >GV074

Sample: BFB DIR INJ 50NG Operator: GREG MS 10/24/89 11:58
Misc : V5
Sys. #: 2 MS model: 70 SW/HW rev.: 1A ALS # : 0
Method file: BFB5 Tuning file: MT7405 No. of extra records: 2
Source temp.: 0 Analyzer temp.: 220 Transfer line temp. : 0

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	10.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

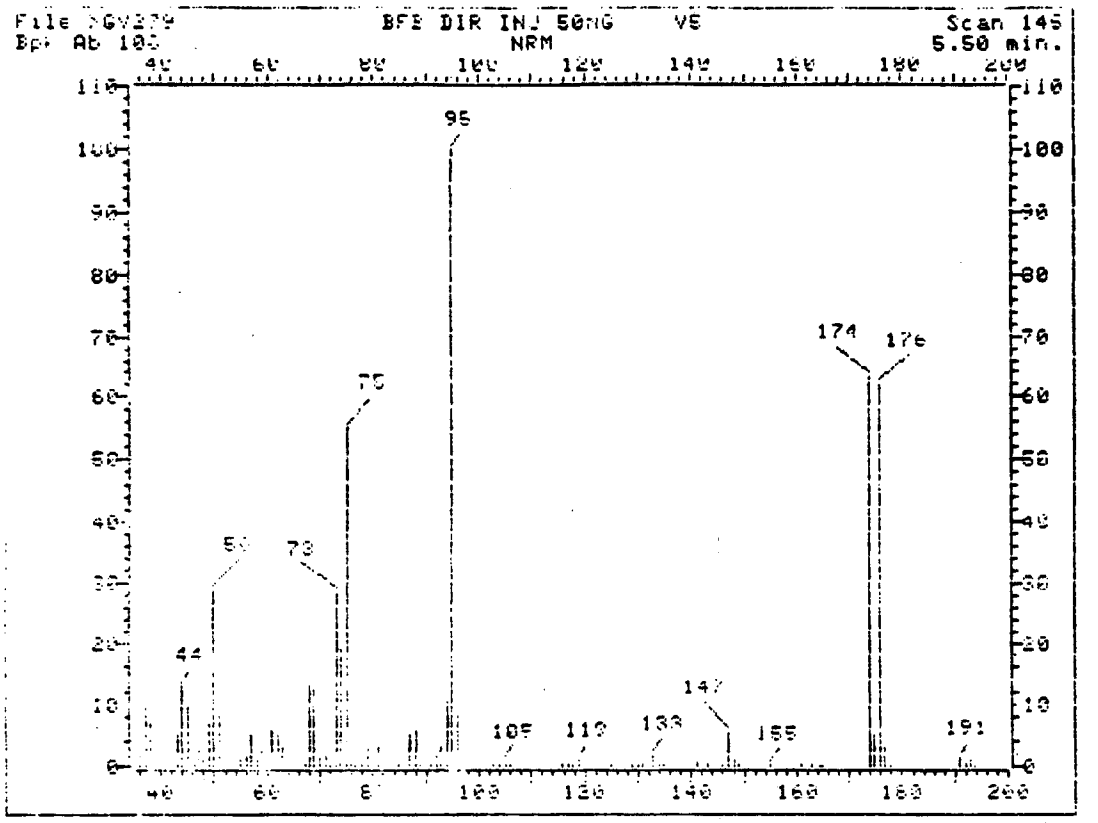
m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	32.21	32.21	Ok
75	30-60% of mass 95	53.83	53.83	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.41	7.41	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	58.20	58.20	Ok
175	5-9% of mass 174	4.07	7.00	Ok
176	95-101% of mass 174	56.66	97.35	Ok
177	5-9% of mass 176	4.27	7.53	Ok

Injection Date: 10/24/89
Injection Time: 11:58
Data File: >GV074
Scan: 167
Name: BFB DIR INJ 50NG
Misc: V5

>GV074 BFB DIR INJ 50NG V5
167 SUB NRM

File: >GV074 Scan #: 167 Retn. time: 6.23

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
36.00	2.423	57.05	2.450	77.85	.110	97.15	.716	146.95	.385
37.00	10.848	62.05	5.865	78.85	4.075	103.25	.385	147.85	.303
38.00	8.563	62.95	5.066	79.95	1.404	103.45	.330	156.75	.303
39.00	2.175	65.55	.303	80.85	4.983	106.75	.441	173.80	58.205
40.00	.633	67.95	14.840	81.95	1.459	107.15	.468	174.80	4.075
47.00	.055	68.95	13.739	86.85	2.478	115.75	.551	175.80	56.663
49.00	6.195	70.05	.826	87.95	2.698	116.95	.633	176.90	4.268
50.00	32.214	71.85	.441	91.95	1.019	118.95	.578	190.90	.275
51.00	8.948	72.95	5.286	92.95	2.340	129.95	.688	206.90	.110
53.00	.385	73.95	16.052	93.95	11.426	140.75	.661	221.00	.468
54.85	.275	74.95	53.827	94.95	100.000	142.75	1.129	248.60	.275
56.05	2.203	76.05	3.166	95.95	7.406				



MS data file header from : >GV279

Sample: BFB DIR INJ 50NG Operator: GREG MS 11/07/89 17:29
Misc : VS
Sys. #: 2 MS model: 70 SW/HW rev.: 1A ALS # : 0
Method file: BFB5 Tuning file: MT7405 No. of extra records: 2
Source temp.: 0 Analyzer temp.: 220 Transfer line temp. : 0

Chromatographic temperatures :	220.	220.	0.	0.	0.
Chromatographic times, min. :	10.0	0.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	0.0	0.0

ENSECO-ERCO Laboratory

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	28.63	28.63	Ok
75	30-60% of mass 95	55.01	55.01	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	8.97	8.97	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	63.26	63.26	Ok
175	5-9% of mass 174	5.10	8.06	Ok
176	95-101% of mass 174	61.88	97.81	Ok
177	5-9% of mass 176	4.62	7.46	Ok

Injection Date: 11/07/89
Injection Time: 17:25
Data File: >GU279
Scan: 145
Name:BFB DIR INJ 50NG
Misc:U5

>GU279 BFB DIR INJ 50NG U5
145 NBM

File: >GU279 Scan #: 145 Retn. time: 5.50

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
36.00	2.083	58.95	2.308	82.85	.391	117.95	.260	173.80	63.262
37.00	9.883	59.95	1.468	84.95	.663	118.95	1.030	174.80	5.101
38.00	7.528	60.95	6.036	85.95	.450	124.95	.391	175.80	61.877
39.00	4.995	61.95	5.018	86.95	5.160	125.75	.178	176.80	4.616
40.00	3.563	62.95	3.716	87.95	5.882	128.95	.213	177.80	.237
41.00	2.355	64.05	.391	88.95	1.207	129.95	.355	179.00	.296
42.00	1.290	67.05	.604	90.95	.864	130.95	.615	190.90	1.373
43.00	4.924	67.95	12.996	91.95	2.474	132.95	1.929	191.90	.320
44.00	12.996	68.95	12.723	92.95	3.444	133.95	.355	192.90	.982
45.00	9.776	69.95	1.373	93.95	10.593	134.85	.568	193.80	.166
46.10	.343	70.95	1.669	94.95	100.000	140.95	.793	205.00	.154
47.10	2.225	72.05	.935	95.95	8.971	142.95	.580	206.90	9.859
48.00	1.030	72.95	28.240	96.75	.234	145.85	.178	207.90	2.201
49.00	6.616	73.95	18.984	96.95	.769	146.95	5.551	209.00	1.326
50.00	28.631	74.95	55.012	98.05	.154	148.05	1.207	209.90	.272
51.00	9.019	75.95	4.533	102.95	.722	148.95	.757	221.00	1.870
52.00	.343	76.85	1.160	104.05	.367	154.95	.355	222.00	.414
54.25	.189	77.95	.473	104.95	.864	160.80	.284	223.00	.544
55.05	1.539	78.85	2.864	105.95	.462	162.80	.438	224.40	.130
55.95	2.545	79.95	1.385	115.85	.320	164.50	.142	248.90	.355
56.95	5.137	80.95	3.125	116.95	.840	164.90	.142	250.90	.402

VOA5.3
11/5/89

Initial Calibration Data
HSL Compounds

Case No: 4858 Instrument ID: V3

Contractor: ENSECO-ERCO LAB Calibration Date: 11/05/89

Contract No: Geo

Minimum $\overline{RF}$ for SPCC is .3000 Maximum % RSD for CCC is 30%

Laboratory ID:		>A355	>A354	>A356	>A357	>A358				
		RF	RF	RF	RF	RF				
	Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RF}$	% RSD	CCC	SPCC
C010	Chloromethane	1.99780	1.44402	2.17697	2.02824	2.12649	1.95471	15.067		**
C020	Vinyl Chloride	1.88139	1.47052	2.07416	1.92691	2.01044	1.87265	12.650	*	
C015	Bromomethane	1.72053	1.42823	1.77872	1.67488	1.71056	1.66258	8.193		
C025	Chloroethane	1.22180	.97744	1.29834	1.21211	1.24509	1.19096	10.407		
C045	1,1-Dichloroethene	1.86825	1.82911	1.72356	1.61499	1.58013	1.72321	7.365	*	
C035	Acetone	.80283	.87036	.65313	.58843	.56002	.69495	19.533		
C040	Carbon Disulfide	5.43482	5.50948	5.97409	5.55640	5.35163	5.56528	4.337		
C030	Methylene Chloride	2.16527	2.41750	1.94498	1.85727	1.92426	2.06186	11.156		
C053	Trans-1,2-Dichloroethene	1.73310	1.61881	1.78873	1.69005	1.73984	1.71411	3.719		
C055	cis-1,2-Dichloroethene	1.73310	1.61881	1.78873	1.69005	1.73984	1.71411	3.719		
C050	1,1-Dichloroethane	4.05172	3.75929	3.89333	3.71671	3.86563	3.85734	3.394		**
C060	Chloroform	3.94754	4.04897	3.69371	3.47116	3.67837	3.76795	6.122	*	
C065	1,2-Dichloroethane	1.37900	1.58036	1.32801	1.46002	1.82259	1.51400	13.017		
C125	Vinyl Acetate	1.40706	1.25371	1.42400	1.32778	1.36807	1.35613	5.033		
C110	2-Butanone	.33287	.27817	.26190	.25021	.26433	.27749	11.715		
C115	1,1,1-Trichloroethane	.78917	.80621	.78673	.69454	.74048	.76343	5.970		
C120	Carbon Tetrachloride	.72171	.75391	.72069	.63166	.67708	.70101	6.765		
C165	Benzene	1.31847	1.24183	1.23960	1.21521	1.26519	1.25606	3.114		
C150	Trichloroethene	.42598	.39701	.39249	.36629	.38312	.39298	5.567		
C140	1,2-Dichloropropane	.49222	.49498	.44418	.47104	.57967	.49642	10.234	*	
C130	Bromodichloromethane	.92451	.95924	.92257	.91330	.96451	.93682	2.490		
C175	2-Chloroethylvinylether	-	-	.00557	.00696	.00746	.00666	14.692		
C143	Cis-1,3-Dichloropropen	.82327	.84829	.81345	.90270	.95286	.86811	6.759		(Conc=24.0,60.0,120.0,180.0,240.0
C172	Trans-1,3-Dichloropropen	.64207	.73825	.68856	.71154	.74426	.70494	5.900		(Conc=16.0,40.0,80.0,120.0,160.0)
C160	1,1,2-Trichloroethane	.44859	.46219	.41412	.43761	.46692	.44589	4.748		
C155	Dibromochloromethane	.81495	.84755	.78555	.76854	.80257	.80383	3.741		
C205	4-Methyl-2-Pentanone	.50764	.49529	.45902	.50453	.53073	.49944	5.225		
C230	Toluene	.86897	.79527	.81591	.84477	.88664	.84231	4.439	*	
C210	2-Hexanone	.30815	.33645	.30307	.32168	.33742	.32135	4.908		
C220	Tetrachloroethene	.57008	.51386	.51392	.47356	.48746	.51178	7.219		
C235	Chlorobenzene	1.16770	1.10171	1.08733	1.04994	1.10278	1.10189	3.862		**
C240	Ethylbenzene	.52837	.53307	.51955	.49891	.52216	.52041	2.524	*	

HSL cmpds only

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

23

Initial Calibration Data
HSL Compounds

Case No: 4858

Instrument ID: V3

Contractor: ENSECO-ERCO LAB

Calibration Date: 11/05/89

Contract No: Geo

Minimum $\overline{RF}$ for SPCC is .3000 Maximum % RSD for CCC is 30%

Laboratory ID:	>A355	>A354	>A356	>A357	>A358					
	RF	RF	RF	RF	RF					
Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RF}$	% RSD	CCC	SPCC	
CXXX Xylene (m,p)	.72593	.74851	.73895	.64903	.63669	.69982	7.543			(Conc=40.0,100.0,200.0,300.0,400.
CXXX Xylenes (o)	.68132	.72165	.70508	.60980	.59835	.66324	8.447			
C245 Styrene	1.22692	1.32422	1.31196	1.14898	1.14647	1.23171	6.929			
C180 Bromoform	.60387	.68405	.64398	.55911	.59204	.61661	7.849		**	
C225 1,1,2,2-letrachloroethan	.61578	.70535	.60793	.54531	.57994	.61086	9.759		**	
C335 Dichlorobenzene (m)	1.28117	1.36008	1.29872	1.10086	1.09858	1.22789	9.823			
C340 Dichlorobenzene (p)	1.35413	1.38765	1.35049	1.11559	1.13030	1.26763	10.490			
C350 Dichlorobenzene (o)	1.30542	1.40041	1.28782	1.08294	1.09052	1.23342	11.400			
C250 Xylene (lotal)	.71134	.74250	.72978	.64276	.63283	.69104	7.230			(Conc=60.0,150.0,300.0,450.0,600.

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 4858

Calibration Date: 11/08/89

Contractor: ENSECO-ERCO LAB

Time: 10:10

Contract No: Geo

Laboratory ID: >A409

Instrument ID: V3

Initial Calibration Date: 11/07/89 ~~11/09/89~~ 11/13/89

Minimum $\overline{RF}$ for SPCC is .3000 Maximum % Diff for CCC is 25%

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C010	Chloromethane	1.95471	1.83342	6.20		**	
C020	Vinyl Chloride	1.87265	1.71002	8.68	*		
C015	Bromomethane	1.66258	1.44525	13.07			
C025	Chloroethane	1.19096	.91097	23.51			
C045	1,1-Dichloroethene	1.72521	1.63885	4.98	*		
C035	Acetone	.69495	.59022	15.07			
C040	Carbon Disulfide	5.56528	4.30715	22.61			
C050	Methylene Chloride	2.06186	1.79642	12.87			
C055	Trans-1,2-Dichloroethene	1.71411	1.56624	8.63			
C055	cis-1,2-Dichloroethene	1.71411	1.56624	8.63			
C050	1,1-Dichloroethane	3.85734	3.52814	8.53		**	
C060	Chloroform	3.76795	3.51883	6.61	*		
C065	1,2-Dichloroethane	1.51400	1.21058	20.04			
C125	Vinyl Acetate	1.35613	.83984	38.07			
C110	2-Butanone	.27749	.24422	11.99			
C115	1,1,1-Trichloroethane	.76343	.66580	13.41			
C120	Carbon Tetrachloride	.78101	.78195	11.54			
C165	Benzene	1.25606	1.35528	7.90			
C150	Trichloroethene	.39298	.44053	12.09			
C140	1,2-Dichloropropane	.49642	.45961	7.41	*		
C130	Bromodichloromethane	.93682	.93404	.30			
C175	2-Chloroethylvinylether	.00666	.00360	45.96			
C145	Cis-1,3-Dichloropropen	.86811	.81467	6.16			(Conc=60.00)
C172	Trans-1,3-Dichloropropen	.70494	.61608	12.61			(Conc=40.00)
C160	1,1,2-Trichloroethane	.44589	.46916	5.22			
C155	Dibromochloromethane	.80283	.81170	.98			
C205	4-Methyl-2-Pentanone	.49944	.43746	12.41			
C250	Toluene	.84231	.91824	9.01	*		
C210	2-Hexanone	.32135	.23337	27.38			
C220	Tetrachloroethene	.51178	.55558	8.56			
C235	Chlorobenzene	1.10189	1.16148	5.41		**	
C240	Ethylbenzene	.52041	.54528	4.78	*		

CIRR 1/5

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 4858

Calibration Date: 11/08/89

Contractor: ENSECO-ERCO LAB

Time: 10:10

Contract No: GEO

Laboratory ID: >A409

Instrument ID: V3

Initial Calibration Date: 11/05/89 CJ NJ 11/13/87

Minimum $\overline{RF}$ for SPCC is .3000

Maximum % Diff for CCC is 25%

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
CXXX	Xylene (m,p)	.69982	.80311	14.76			(Conc=100.00)
CXXX	Xylenes (o)	.66324	.76452	15.24			
C245	Styrene	1.23171	1.36259	10.63			
C180	Bromoform	.61661	.60089	2.55		**	
C225	1,1,2,2-Tetrachloroethan	.61086	.58861	3.64		**	
C355	Dichlorobenzene (m)	1.22788	1.27652	3.96			
C340	Dichlorobenzene (p)	1.26763	1.36434	7.63			
C350	Dichlorobenzene (o)	1.23342	1.27798	3.61			
C250	Xylene (Total)	.69104	.79189	14.59			(Conc=150.00)

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: 4858 Instrument ID: V5

Contractor: ENSECO Calibration Date: 10/24/89

Contract No: Geo

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30%

Laboratory ID:		>GV078	>GV079	>GV080	>GV081	>GV082				
		RF	RF	RF	RF	RF				
	Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RF}$	% RSD	CCC	SPCC
C010	Chloromethane	1.00498	.65279	.74975	.54336	.53195	.69657	27.841		**
C015	Bromomethane	1.56564	1.51881	1.72088	1.49606	1.59858	1.57999	5.589		
C020	Vinyl Chloride	1.20597	.96085	1.09188	.87177	.89525	1.00515	14.041	*	
C025	Chloroethane	.87049	.79542	.92655	.80796	.85796	.85168	6.178		
C030	Methylene Chloride	2.02540	1.77403	1.67431	1.48070	1.46667	1.68422	13.712		
C035	Acetone	.45737	.49407	.54107	.51525	.45254	.49206	7.677		
C040	Carbon Disulfide	3.80011	3.64074	4.45380	4.05755	3.84302	3.95904	7.933		
C045	1,1-Dichloroethene	1.30094	1.14522	1.33153	1.21492	1.14876	1.22827	6.973	*	
C050	1,1-Dichloroethane	3.26013	3.00338	3.55823	3.20165	3.15402	3.23548	6.304		**
C053	Trans-1,2-Dichloroethene	1.33059	1.16592	1.34584	1.15760	1.28837	1.25766	7.163		
C060	Chloroform	4.15710	3.79785	4.38531	3.96715	3.90032	4.04155	5.755	*	
C065	1,2-Dichloroethane	3.77831	3.41949	3.97222	3.49794	3.82008	3.69761	6.257		
CS15	D4-1,2-Dichloroethane	2.83252	3.01422	3.14080	3.18441	3.36497	3.10738	6.388		(Conc=50.0,50.0,50.0,50.0,50.0)
C110	2-Butanone	.21800	.21380	.23067	.21861	.21702	.21962	2.937		
C115	1,1,1-Trichloroethane	1.04325	.92542	1.07211	.95522	1.06061	1.01132	6.572		
C120	Carbon Tetrachloride	.98416	.90795	1.05405	.97982	.92966	.97113	5.832		
C125	Vinyl Acetate	1.01152	1.02303	1.19774	1.15815	1.16765	1.11162	7.867		
C130	Bromodichloromethane	1.19004	1.08387	1.23360	1.09497	1.22421	1.16534	6.117		
C140	1,2-Dichloropropane	.52648	.48731	.54150	.49909	.50300	.51148	4.301	*	
C143	Cis-1,3-Dichloropropene	.82559	.77626	.85213	.78929	.86073	.82080	4.549		(Conc=24.0,60.0,120.0,180.0,240.0
C150	Trichloroethene	.47739	.41821	.47217	.43050	.41300	.44225	6.879		
C155	Dibromochloromethane	.83590	.80647	.91120	.86943	.87464	.85953	4.643		
C160	1,1,2-Trichloroethane	.39610	.36078	.39194	.36588	.36741	.37642	4.335		
C165	Benzene	1.03009	.92061	1.01652	.92868	1.00392	.97996	5.247		
C172	Trans-1,3-Dichloropropen	.66247	.62083	.66428	.62372	.69626	.65351	4.827		(Conc=16.0,40.0,80.0,120.0,160.0
C175	2-Chloroethylvinylether	.11851	.12465	.11611	.12337	.13463	.12345	5.794		
C180	Bromoform	.53699	.53626	.61727	.58558	.65074	.58537	8.560		**
C205	4-Methyl-2-Pentanone	.58906	.59440	.71501	.73476	.70698	.66804	10.541		
C210	2-Hexanone	.40785	.38358	.43578	.45174	.43425	.42264	6.370		
C220	Tetrachloroethene	.50558	.44634	.50769	.46532	.43397	.47178	7.148		
C225	1,1,2,2-Tetrachloroethan	.69909	.61223	.71211	.68322	.73389	.68811	6.729		**
C230	Toluene	.81995	.70408	.81000	.73365	.78614	.77076	6.493	*	

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

MC 10/24

Initial Calibration Data
HSL Compounds

Case No: 4858 Instrument ID: V5

Contractor: ENSECO Calibration Date: 10/24/89

Contract No: Geo

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % RSD for CCC is 30%

Laboratory ID:		>GV078	>GV079	>GV080	>GV081	>GV082					
		Rf	RF	RF	RF	RF					
	Compound	20.00	50.00	100.00	150.00	200.00	$\overline{RF}$	% RSD	CCC	SPCC	
C505	D8-Toluene	1.31820	1.34592	1.35592	1.35423	1.35912	1.34668	1.236			(Conc=50.0,50.0,50.0,50.0,50.0)
C235	Chlorobenzene	1.07620	.94479	1.07805	.98129	.97200	1.01047	6.167		**	
C240	Ethylbenzene	.51467	.43908	.49137	.43986	.48592	.47418	7.060	*		
CXXX	Xylene (m)	.70601	.65429	.73242	.67502	.64220	.68199	5.447			
C245	Styrene	1.13429	1.05648	1.18412	1.10965	1.07809	1.11252	4.480			
CXXX	Xylenes (o , p)	.62882	.59074	.65547	.60988	.57818	.61262	5.012			(Conc=40.0,100.0,200.0,300.0,400.
C510	Bromofluorobenzene (BFB)	1.15137	1.13695	1.15266	1.14941	1.14960	1.14800	.551			(Conc=50.0,50.0,50.0,50.0,50.0)
C250	Xylene (Total)	.65454	.61213	.68261	.63159	.60110	.63639	5.165			(Conc=60.0,150.0,300.0,450.0,600.

Rf - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 4858 Calibration Date: 11/07/89

Contractor: ENSECO Time: 17:51

Contract No: Geo Laboratory ID: >GV280

Instrument ID: V5 Initial Calibration Date: 10/24/89

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25%%

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C010	Chloromethane	.69657	.86895	24.75		**	
C015	Bromomethane	1.57999	1.73169	9.60			
C020	Vinyl Chloride	1.00515	1.23548	22.92	*		
C025	Chloroethane	.85168	1.01420	19.08			
C030	Methylene Chloride	1.68422	2.05810	22.20			
C035	Acetone	.49206	.38351	22.06			
C040	Carbon Disulfide	3.95904	3.35105	15.36			
C045	1,1-Dichloroethene	1.22827	1.38795	13.00	*		
C050	1,1-Dichloroethane	3.23546	3.31385	2.42		**	
C053	Trans-1,2-Dichloroethene	1.25766	1.32612	5.44			
C060	Chloroform	4.04155	3.46735	14.21	*		
C065	1,2-Dichloroethane	3.69761	2.56645	30.58			
C515	D4-1,2-Dichloroethane	3.10738	2.31807	25.48			
C110	2-Butanone	.21962	.17672	19.54			
C115	1,1,1-Trichloroethane	1.01132	.60569	40.11			
C120	Carbon Tetrachloride	.97113	.56988	41.32			
C125	Vinyl Acetate	1.11162	.86438	22.24			
C130	Bromodichloromethane	1.16534	.75778	34.97			
C140	1,2-Dichloropropane	.51148	.48424	5.32	*		
C143	Cis-1,3-Dichloropropene	.82080	.67349	17.95			(Conc=60.00)
C150	Trichloroethene	.44225	.39835	9.93			
C155	Dibromochloromethane	.85953	.56704	34.03			
C160	1,1,2-Trichloroethane	.37642	.34087	9.44			
C165	Benzene	.97996	.96390	1.64			
C172	Trans-1,3-Dichloropropen	.65351	.50383	22.90			(Conc=40.00)
C175	2-Chloroethylvinylether	.12345	.11374	7.87			
C180	Bromoform	.58537	.37346	36.20		**	
C205	4-Methyl-2-Pentanone	.66804	.46561	30.30			
C210	2-Hexanone	.42264	.30149	28.67			
C220	Tetrachloroethene	.47178	.41915	11.16			
C225	1,1,2,2-Tetrachloroethan	.68811	.65317	5.08		**	
C230	Toluene	.77076	.74078	3.89	*		

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: 4858

Calibration Date: 11/02/89

Contractor: ENSECO

Time: 12:51

Contract No: Geo

Laboratory ID: >GV280

Instrument ID: V5

Initial Calibration Date: 10/24/89

Minimum $\overline{RF}$ for SPCC is 0.300 Maximum % Diff for CCC is 25%%

	Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C505	D8-Toluene	1.34668	1.30657	2.99			
C255	Chlorobenzene	1.01047	.96207	4.79		**	
C240	Ethylbenzene	.47413	.44364	6.44	*		
CXXX	Xylene (m)	.68199	.65561	3.87			
C245	Styrene	1.11252	.98055	11.86			
CXXX	Xylenes (o , p)	.61262	.59578	2.75			(Conc=100.00)
C510	Bromofluorobenzene (BFB)	1.14800	.97686	14.91			
C250	Xylene (Total)	.63659	.61479	3.59			(Conc=150.00)

RF - Response Factor from daily standard file at 50.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Three

Enseco
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TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-1
Lab ID: 004858-0001-SA Enseco ID: 2032152
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 07 NOV 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	1000	
Bromomethane	ND	ug/L	1000	
Vinyl chloride	ND	ug/L	1000	
Chloroethane	ND	ug/L	1000	
Methylene chloride	970	ug/L	500	B
Acetone	530	ug/L	1000	JB
Carbon disulfide	ND	ug/L	500	
1,1-Dichloroethene	ND	ug/L	500	
1,1-Dichloroethane	ND	ug/L	500	
1,2-Dichloroethene (total)	ND	ug/L	500	
Chloroform	ND	ug/L	500	
1,2-Dichloroethane	ND	ug/L	500	
2-Butanone	ND	ug/L	1000	
1,1,1-Trichloroethane	ND	ug/L	500	
Carbon tetrachloride	ND	ug/L	500	
Vinyl acetate	ND	ug/L	1000	
Bromodichloromethane	ND	ug/L	500	
1,2-Dichloropropane	ND	ug/L	500	
trans-1,3-Dichloropropene	ND	ug/L	500	
Trichloroethene	ND	ug/L	500	
Dibromochloromethane	ND	ug/L	500	
1,1,2-Trichloroethane	ND	ug/L	500	
Benzene	ND	ug/L	500	
cis-1,3-Dichloropropene	ND	ug/L	500	
Bromoform	ND	ug/L	500	
4-Methyl-2-pentanone	ND	ug/L	1000	
2-Hexanone	ND	ug/L	1000	
1,1,2,2-Tetrachloroethane	ND	ug/L	500	
Tetrachloroethene	ND	ug/L	500	
Toluene	ND	ug/L	500	
Chlorobenzene	ND	ug/L	500	
Ethylbenzene	8300	ug/L	500	
Styrene	ND	ug/L	500	
Xylenes (total)	45000	ug/L	500	
1,2-Dichloroethane-d4	104	%	--	
Toluene-d8	99.1	%	--	
4-Bromofluorobenzene	106	%	--	

(continued on following page)

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS (CONT.)
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-1
Lab ID: 004858-0001-SA Enseco ID: 2032152
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 07 NOV 89

Note B : Compound is also detected in the blank.

Note J : Result is detected below the reporting limit or is an estimated concentration.

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING COMPANY

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-1
Lab ID: 004858-0001-SA Enseco ID: 2032152
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 07 NOV 89

Parameter	Result	Units	Reporting Limit
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

L = 11/6 VSA
R = 11/7 VSB

Reduced by : Date: 11/8/89 Data File: >GV283
Reviewed by: Date: 11/8/89 Page: 1

Enseco GC/MS
Target Compound Data Summary Sheet

Sample: GEO 4858-01 50UL
Misc : V5 CH09 5ULQC33G
Injected : 11/07/89 21:30 Units: UG/L
Analyst: GREG Run Factor: 100.000
ID File: VOAID5 Surrogate vol: .005
Quant list threshold: 1.00

Surrogate Spike Recoveries

Compound		Surrogate Amount (ug) Spiked	Measured	% Recovery Measured	QC limits
C515	D4-1,2-Dichloroethane	.2500	.2605	104	76 114
C505	D8-Toluene	.2500	.2477	99.1	88 110
C510	Bromofluorobenzene (BFB)	.2500	.2662	106	86 115

Target Compounds: VOAID5

Scan #	Concentration Quant List UG/L	Sample UG/L		Compound
		BDL	C010	Chloromethane
		BDL	C015	Bromomethane
		BDL	C020	Vinyl Chloride
		BDL	C025	Chloroethane
69	9.711	970 # B	C030	Methylene Chloride
78	5.264	~~530~~ JB	C035	Acetone
		BDL	C040	Carbon Disulfide
		BDL	C045	1,1-Dichloroethene
		BDL	C050	1,1-Dichloroethane
		BDL	C053	Trans-1,2-Dichloroethene
		BDL	C060	Chloroform
		BDL	C065	1,2-Dichloroethane
		BDL	C110	2-Butanone
		BDL	C115	1,1,1-Trichloroethane
		BDL	C120	Carbon Tetrachloride
		BDL	C125	Vinyl Acetate
		BDL	C130	Bromodichloromethane
		BDL	C140	1,2-Dichloropropane
		BDL	C143	Cis-1,3-Dichloropropene
		BDL	C150	Trichloroethene
		BDL	C155	Dibromochloromethane
		BDL	C160	1,1,2-Trichloroethane
		BDL	C165	Benzene
		BDL	C172	Trans-1,3-Dichloropropen
		BDL	C175	2-Chloroethylvinylether
		BDL	C180	Bromoform
		BDL	C205	4-Methyl-2-Pentanone

11/8

Data file: >GV283 Page: 2
Sample: GEO 4858-01 50UL

Scan #	Concentration Quant list UG/L	Concentration Sample UG/L		Compound
		BDL	C210	2-Hexanone
		BDL	C220	Tetrachloroethene
		BDL	C225	1,1,2,2-Tetrachloroethan
		BDL	C230	Toluene
		BDL	C235	Chlorobenzene
355	83.027	8300	C240	Ethylbenzene
399	~~255.061~~	~~26000~~	CXXX	Xylene (m)
399	7.834 Rtaf	~~780~~	C245	Styrene
409	~~185.445~~	~~19000~~	CXXX	Xylenes (o , p)
409	~~181.263~~	~~18000~~	C250	Xylene (Total)
	+53.79	45,000		

✓ 11/8/89

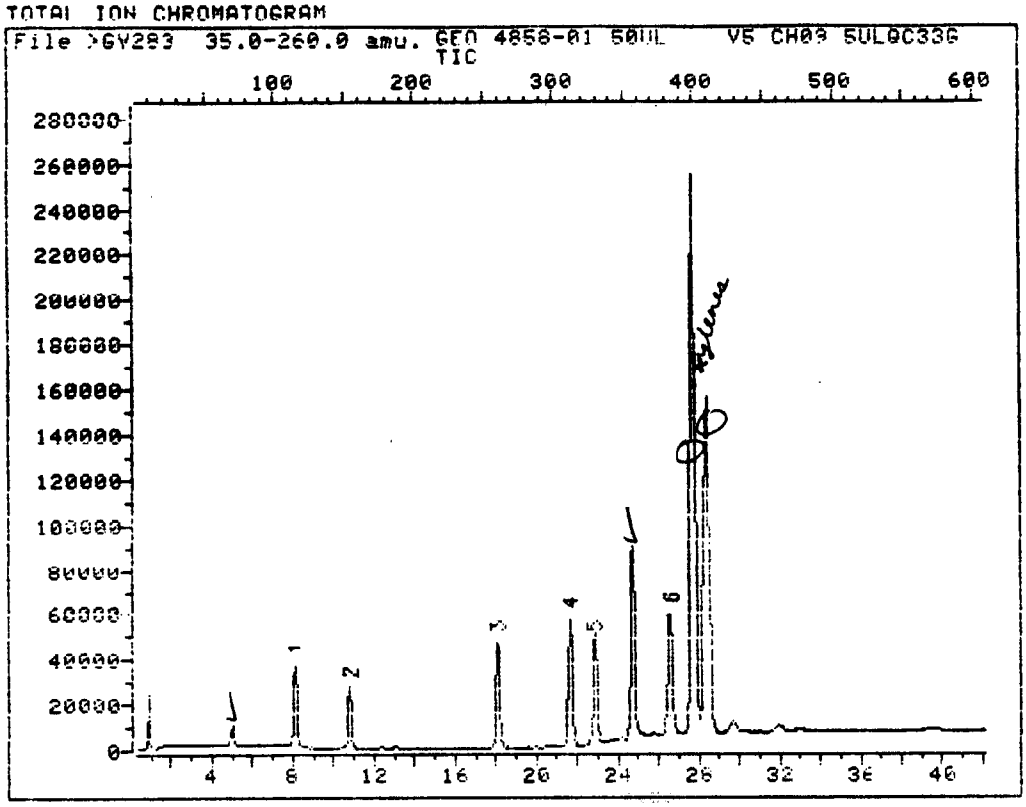
Diagnostic Quant Report

Data File: >GV283::D6 Injected at: 21:30 11/07/89
Quant'd : 22:13 11/07/89
ID File : VOAID5::$$ Calibrated : 19:07 11/07/89

Compound		- R.T. Info - Pred	Found	Dif	Ion	Area	RF	Conc.
1) *C101	Bromochloromethane	7.90	8.10	.20	128.0	45601	1.0000	50.00
2) C010	Chloromethane	1.11	0.00	--	50.0	0	.8690	0.00
3) C015	Bromomethane	1.75	0.00	--	94.0	0	1.7317	0.00
4) C020	Vinyl Chloride	2.24	0.00	--	62.0	0	1.2355	0.00
5) C025	Chloroethane	2.95	0.00	--	64.0	0	1.0142	0.00
6) C030	Methylene Chloride	4.78	5.01	.22	84.0	18227	2.0581	9.71
7) C035	Acetone	5.49	5.62	.13	43.0	1841	.3835	5.26
8) C040	Carbon Disulfide	6.20	0.00	--	76.0	0	3.3511	0.00
9) C045	1,1-Dichloroethene	7.61	0.00	--	96.0	0	1.3879	0.00
10) C050	1,1-Dichloroethane	8.88	0.00	--	63.0	0	3.3138	0.00
11) C053	Trans-1,2-Dichloroe	9.65	0.00	--	96.0	0	1.3261	0.00
12) C060	Chloroform	10.36	0.00	--	83.0	0	3.4674	0.00
13) C065	1,2-Dichloroethane	11.07	0.00	--	62.0	0	2.5668	0.00
14) C515	D4-1,2-Dichloroetha	11.00	10.78	.23	65.0	110148	2.3181	52.10
15) *C110	1,4-Difluorobenzene	18.08	18.08	.01	114.0	182812	1.0000	50.00
16) C110	2-Butanone	10.72	0.00	--	43.0	0	.1767	0.00
17) C115	1,1,1-Trichloroetha	11.96	0.00	--	97.0	0	.6057	0.00
18) C120	Carbon Tetrachlorid	12.37	0.00	--	117.0	0	.5699	0.00
19) C125	Vinyl Acetate	12.64	0.00	--	43.0	0	.8644	0.00
20) C130	Bromodichloromethan	12.99	0.00	--	83.0	0	.7578	0.00
21) C140	1,2-Dichloropropane	14.23	0.00	--	63.0	0	.4842	0.00
22) C143	Cis-1,3-Dichloropro	14.57	0.00	--	75.0	0	.6755	0.00
23) C150	Trichloroethene	15.12	0.00	--	130.0	0	.3983	0.00
24) C155	Dibromochloromethan	15.74	0.00	--	129.0	0	.5670	0.00
25) C160	1,1,2-Trichloroetha	15.88	0.00	--	97.0	0	.3409	0.00
26) C165	Benzene	15.53	0.00	--	78.0	0	.9639	0.00
27) C172	Trans-1,3-Dichlorop	15.81	0.00	--	75.0	0	.5038	0.00
28) C175	2-Chloroethylvinyle	16.84	0.00	--	63.0	0	.1137	0.00
29) C180	Bromoform	18.35	0.00	--	173.0	0	.3735	0.00
30) *C120	D5-Chlorobenzene	22.83	22.83	.01	117.0	153146	1.0000	50.00
31) C205	4-Methyl-2-Pentanon	18.77	0.00	--	43.0	0	.4656	0.00
32) C210	2-Hexanone	20.28	0.00	--	43.0	0	.3015	0.00
33) C220	Tetrachloroethene	20.62	0.00	--	164.0	0	.4191	0.00
34) C225	1,1,2,2-Tetrachloro	20.69	0.00	--	83.0	0	.6532	0.00
35) C230	Toluene	21.79	0.00	--	92.0	0	.7408	0.00
36) C505	D8-Toluene	21.66	21.66	.00	98.0	198250	1.3064	49.55
37) C235	Chlorobenzene	22.96	0.00	--	112.0	0	.9621	0.00
38) C240	Ethylbenzene	24.68	24.68	.00	106.0	112821	.4436	85.03
39) CXXX	Xylene (m)	27.71	27.71	.00	106.0	512166	.6556	255.05
39)D CXXX	Xylene (m)	27.71	28.40	.69	106.0	331192	.6556	164.93
40) C245	Styrene	27.50	27.71	.21	104.0	23528	.9806	7.85
41)D CXXX	Xylenes (o , p)	28.33	27.71	.62	106.0	512166	.5958	280.66
41) CXXX	Xylenes (o , p)	28.33	28.40	.07	106.0	343880	.5958	188.44
42) C510	Bromofluorobenzene	26.54	26.61	.07	95.0	159271	.9769	53.23
43)D C250	Xylene (Total)	28.33	24.68	3.65	106.0	112825	.6148	59.92
43)D C250	Xylene (Total)	28.33	27.71	.62	106.0	512186	.6148	272.00
43) C250	Xylene (Total)	28.33	28.40	.07	106.0	341330	.6148	181.26
43)D C250	Xylene (Total)	28.33	31.98	3.65	106.0	2453	.6148	1.30

* - Compound is an Internal Standard
D - [illegible]

TOTAL ION CHROMATOGRAM

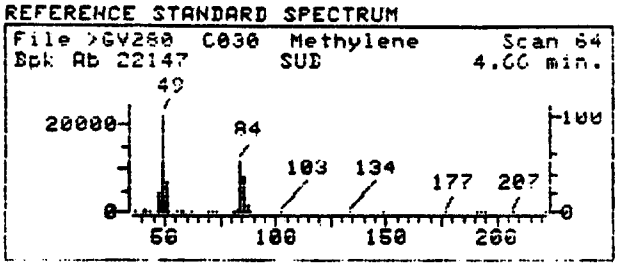


Data File: >GV283::D6 Quant Output File: ^GV283::QU
Name: GEO 4858-01 50UL
Misc: V5 CH09 5ULQC33G

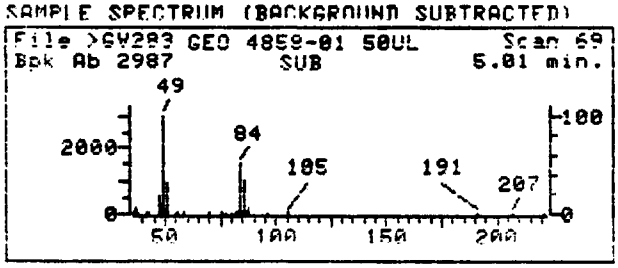
Id File: VOA1D5::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V5:ERCO/ENSECO
Last Calibration: 891107 19:07

Operator ID: GREG
Quant Time: 891107 22:13
Injected at: 891107 21:30

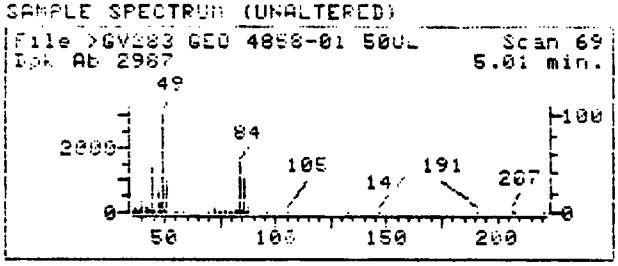
REFERENCE STANDARD SPECTRUM

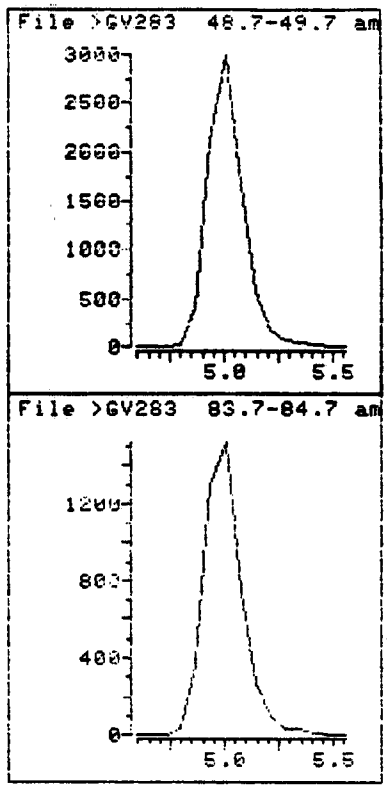


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)

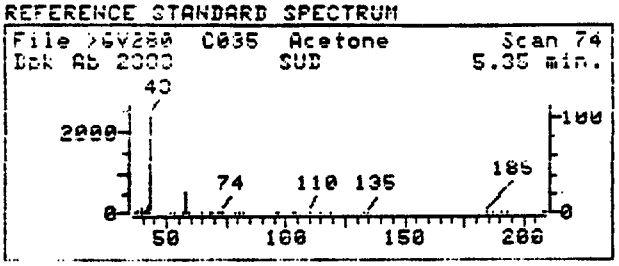




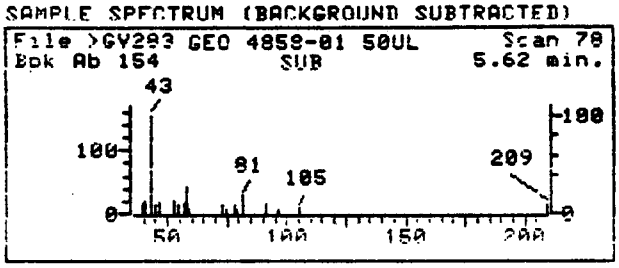
Data File: >GV283::D6 Quant Output File: ^GV283::QD
Name: GEO 4858-01 50UL
Misc: V5 CH09 50LQL33G
Quant Time: 891107 22:13 Quant ID File: VOAID5::$4
Injected at: 891107 21:30 Last Calibration: 891107 19:0

Compound No: 6
Compound Name: CO30 Methylene Chloride
Scan Number: 69
Retention Time: 5.01 min.
Quant Ion: 84.0
Area: 18227
Concentration: 9.71 ug/L
q-value: 82

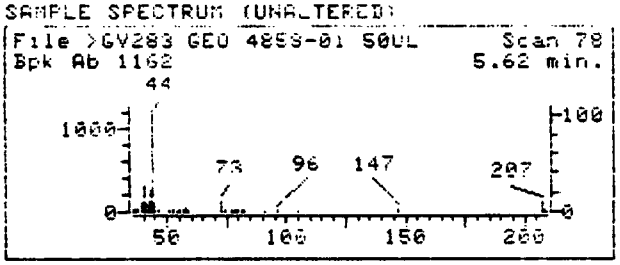
REFERENCE STANDARD SPECTRUM

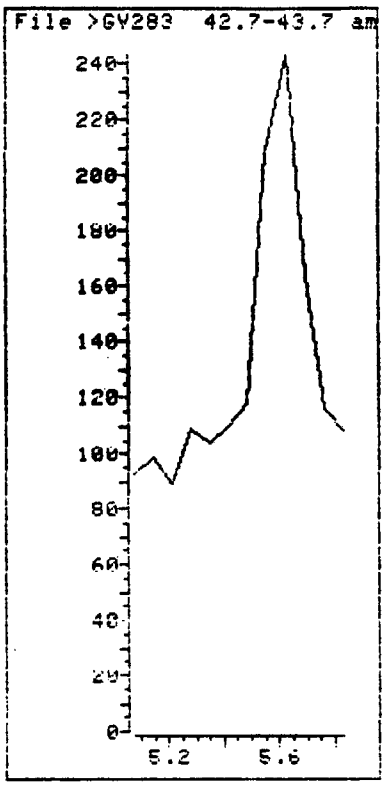


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





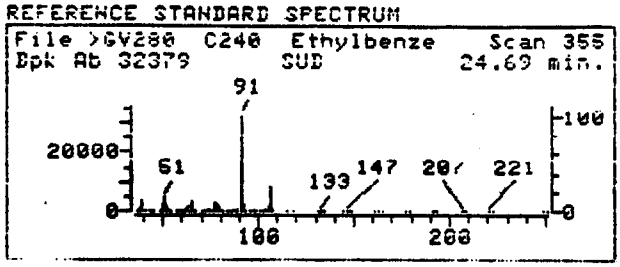
Data File: >GV283::D6
Name: GEO 4858-01 50UL
Misc: V5 CH09 50ULQC336
Quant Time: 891107 22:19
Injected at: 891107 21:30

Quant Output File: ^GV283::QO

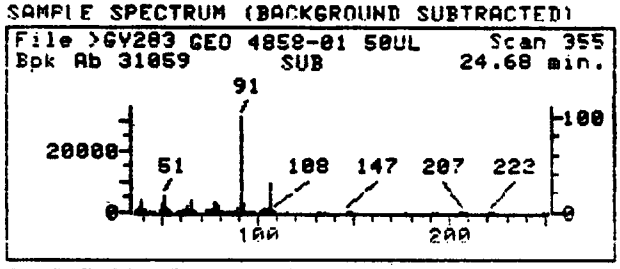
Quant ID File: VOA1D5::$3
Last Calibration: 891107 19:03

Compound No: 7
Compound Name: C035 Acetone
Scan Number: 78
Retention Time: 5.62 min.
Quant Ion: 43.0
Area: 1841
Concentration: 5.26 ug/L
q-value: 100

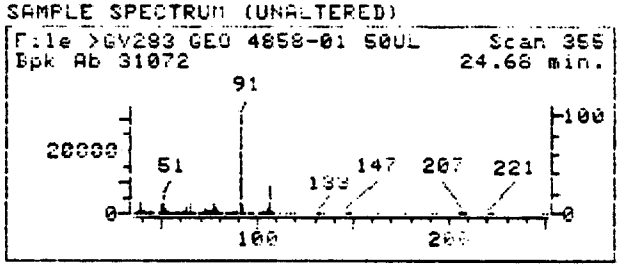
REFERENCE STANDARD SPECTRUM

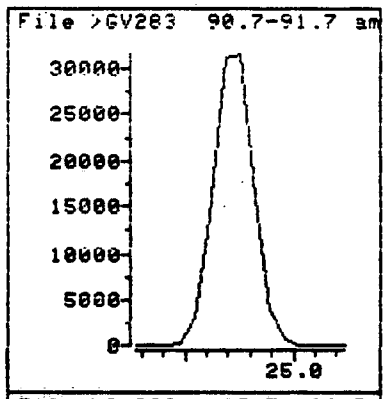


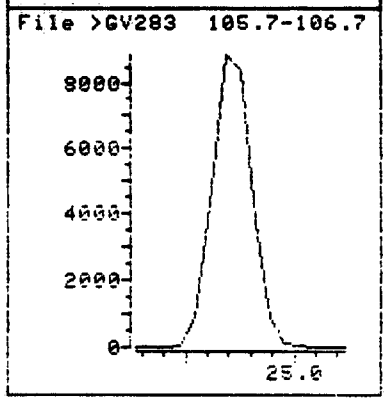
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







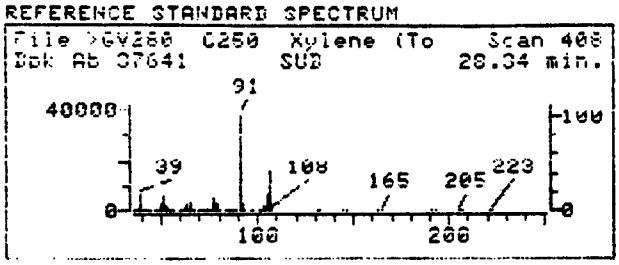
Data File: >GV283::D6
Name: GEO 4858-01 50UL
Misc: V5 CH09 50LQC336
Quant Time: 891107 22:13
Injected at: 891107 21:30

Quant Output File: ^GV283::QD

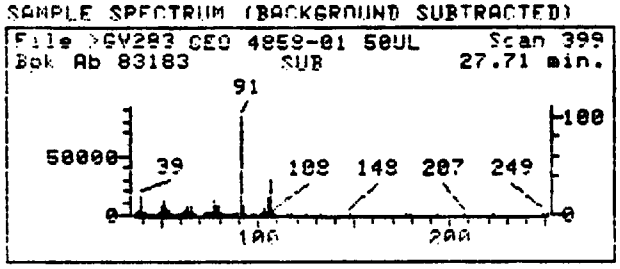
Quant ID File: VOA1D5::$$
Last Calibration: 891107 19:07

Compound No: 38
Compound Name: C240 Ethylbenzene
Scan Number: 355
Retention Time: 24.68 min.
Quant Ion: 106.0
Area: 112821
Concentration: 85.03 ug/L
q-value: 97

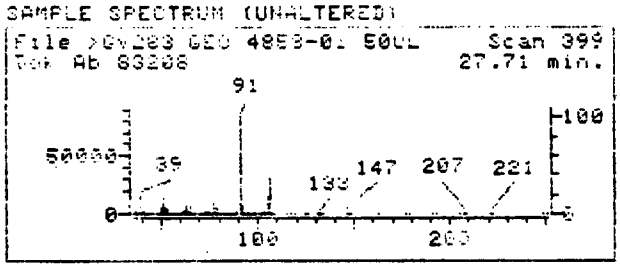
REFERENCE STANDARD SPECTRUM

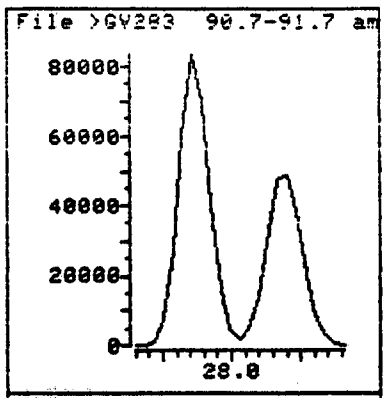


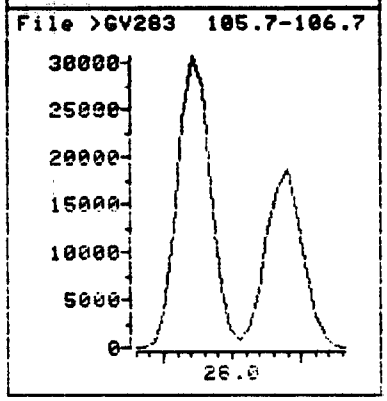
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







Data File: >GV283::D6
Name: GEO 4858-01 50UL
Misc: V5 CH09 50LQC336
Quant Time: 891107 22:13
Injected at: 891107 21:30

Quant Output File: ^GV283::QO

Quant ID File: VOA105::$$
Last Calibration: 891107 19:07

Compound No: 43
Compound Name: C250 Xylene (Total)
Scan Number: 399
Retention Time: 27.71 min.
Quant Ion: 106.0
Area: 854518M
Concentration: 453.79 ug/L
q-value: 96

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-2
Lab ID: 004858-0002-SA Enseco ID: 2032153
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	100	
Bromomethane	ND	ug/L	100	
Vinyl chloride	ND	ug/L	100	
Chloroethane	ND	ug/L	100	
Methylene chloride	41	ug/L	50	JB
Acetone	ND	ug/L	100	
Carbon disulfide	ND	ug/L	50	
1,1-Dichloroethene	ND	ug/L	50	
1,1-Dichloroethane	ND	ug/L	50	
1,2-Dichloroethene (total)	ND	ug/L	50	
Chloroform	ND	ug/L	50	
1,2-Dichloroethane	ND	ug/L	50	
2-Butanone	ND	ug/L	100	
1,1,1-Trichloroethane	ND	ug/L	50	
Carbon tetrachloride	ND	ug/L	50	
Vinyl acetate	ND	ug/L	100	
Bromodichloromethane	ND	ug/L	50	
1,2-Dichloropropane	ND	ug/L	50	
trans-1,3-Dichloropropene	ND	ug/L	50	
Trichloroethene	ND	ug/L	50	
Dibromochloromethane	ND	ug/L	50	
1,1,2-Trichloroethane	ND	ug/L	50	
Benzene	ND	ug/L	50	
cis-1,3-Dichloropropene	ND	ug/L	50	
Bromoform	ND	ug/L	50	
4-Methyl-2-pentanone	ND	ug/L	100	
2-Hexanone	ND	ug/L	100	
1,1,2,2-Tetrachloroethane	ND	ug/L	50	
Tetrachloroethene	ND	ug/L	50	
Toluene	ND	ug/L	50	
Chlorobenzene	ND	ug/L	50	
Ethylbenzene	ND	ug/L	50	
Styrene	ND	ug/L	50	
Xylenes (total)	670	ug/L	50	
1,2-Dichloroethane-d4	97.0	%	--	
Toluene-d8	99.6	%	--	
4-Bromofluorobenzene	94.8	%	--	

(continued on following page)

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS (CONT.)
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-2
Lab ID: 004858-0002-SA Enseco ID: 2032153
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Note J : Result is detected below the reporting limit or is an estimated concentration.

Note B : Compound is also detected in the blank.

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-2
Lab ID: 004858-0002-SA Enseco ID: 2032153
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

C/O - A413
- A409

110889V3A - A412
A413

110889V3A A410 -

Reduced by : PA Date: 110889 Data File: >A414
Reviewed by: CL Date: 11/9/89 Page: 1

Acetone - 7.68
MeCl - 5.35

Enseco GC/MS
Target Compound Data Summary Sheet

Sample: GEO 4858-2 500UL
Misc. : V3 C1 5ULQC33G
Injected : 11/08/89 14:34 Units: UG/L
Analyst: GREG Run Factor: 10.000
ID File: VOAID3 Surrogate vol: .005
Quant list threshold: 1.00

Surrogate Spike Recoveries

Compound		Surrogate Amount (ug) Spiked	Measured	% Recovery Measured	QC limits
C515	D4-1,2-Dichloroethane	.2500	.2424	97.0	76 114
C505	D8-Toluene	.2500	.2490	99.6	88 110
C510	Bromofluorobenzene (BFB)	.2500	.2369	94.8	86 115

Target Compounds: VOAID3

Scan #	Concentration Quant List UG/L	Sample UG/L		Compound
		BDL	C010	Chloromethane
		BDL	C020	Vinyl Chloride
		BDL	C015	Bromomethane
		BDL	C025	Chloroethane
		BDL	C045	1,1-Dichloroethene
		BDL	C035	Acetone
		BDL	C040	Carbon Disulfide
268	4.082	41	C030	Methylene Chloride
		BDL	C053	Trans-1,2-Dichloroethene
		BDL	C055	cis-1,2-Dichloroethene
		BDL	C050	1,1-Dichloroethane
		BDL	C060	Chloroform
		BDL	C065	1,2-Dichloroethane
		BDL	C125	Vinyl Acetate
		BDL	C110	2-Butanone
		BDL	C115	1,1,1-Trichloroethane
		BDL	C120	Carbon Tetrachloride
		BDL	C165	Benzene
		BDL	C150	Trichloroethene
		BDL	C140	1,2-Dichloropropane
		BDL	C130	Bromodichloromethane
		BDL	C175	2-Chloroethylvinylether
		BDL	C143	Cis-1,3-Dichloropropen
		BDL	C172	Trans-1,3-Dichloropropen
		BDL	C160	1,1,2-Trichloroethane
		BDL	C155	Dibromochloromethane
673	2.702	27	C205	4-Methyl-2-Pentanone

JB# MM 119

Data file: >A414 Page: 2
Sample: GEO 4858-2 500UL

Scan #	Concentration Quant list UG/L	Concentration Sample UG/L		Compound
		BDL	C230	Toluene
		BDL	C210	2-Hexanone
		BDL	C220	Tetrachloroethene
		BDL	C235	Chlorobenzene
		BDL	C240	Ethylbenzene
848	65.870	660	CXXX	Xylene (m,p)
848	69.213	690	CXXX	Xylenes (o)
		BDL	C245	Styrene
		BDL	C180	Bromoform
		BDL	C225	1,1,2,2-Tetrachloroethan
		BDL	C335	Dichlorobenzene (m)
		BDL	C340	Dichlorobenzene (p)
		BDL	C350	Dichlorobenzene (o)
848	66.761	670	C250	Xylene (Total)

CL 11/9/89

Diagnostic Quant Report

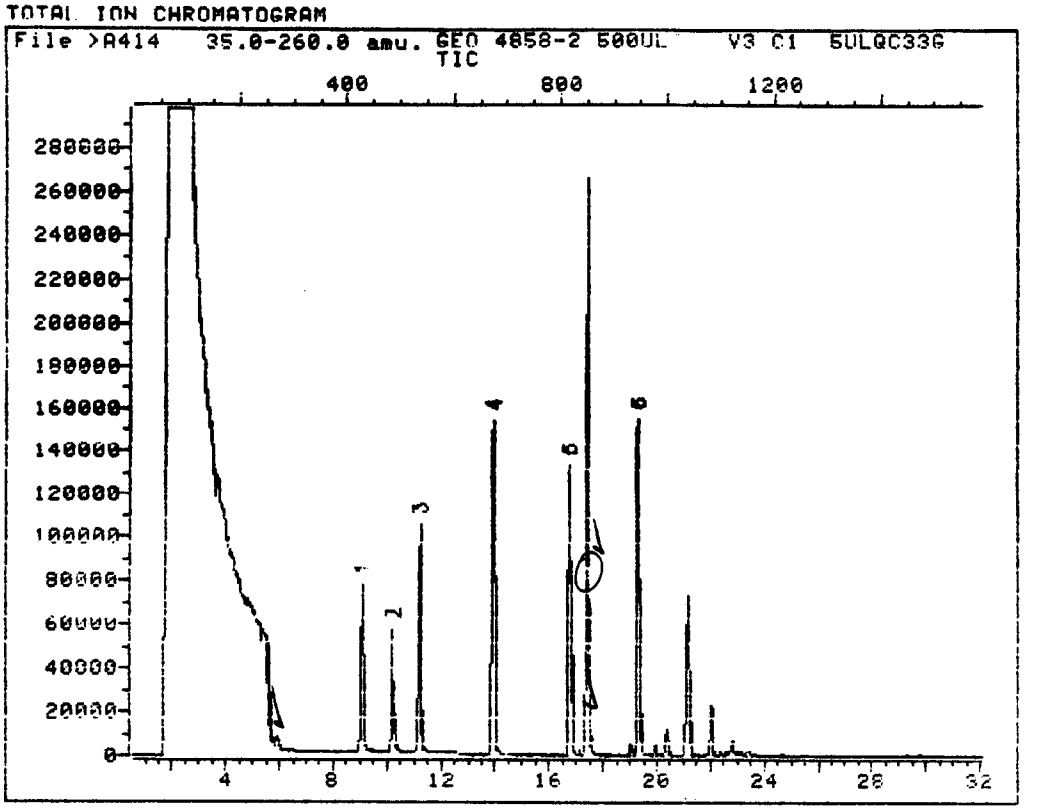
Data File: >A414 ::D3 Injected at: 14:34 11/08/89
Quant'd : 15:07 11/08/89
ID File : VOA1D3::$$ Calibrated : 10:52 11/08/89

	Compound		- R.T. Info - Pred	Found	Dif	Ion	Area	RF	Conc.
1)	*CI01	Bromochloromethane	9.04	9.06	.02	128.0	66388	1.0000	50.00
2)	C010	Chloromethane	2.25	0.00	--	50.0	0	1.8334	0.00
3)	C020	Vinyl Chloride	2.45	0.00	--	62.0	0	1.7100	0.00
4)	C015	Bromomethane	2.93	0.00	--	94.0	0	1.4453	0.00
5)	C025	Chloroethane	3.17	0.00	--	64.0	0	.9110	0.00
6)	C045	1,1-Dichloroethene	4.64	0.00	--	96.0	0	1.6388	0.00
7)	C035	Acetone	4.98	0.00	--	43.0	0	.5902	0.00
8)	C040	Carbon Disulfide	4.90	0.00	--	76.0	0	4.3072	0.00
9)	C030	Methylene Chloride	5.89	5.88	.01	84.0	9736	1.7964	4.08
10)	C053	Trans-1,2-Dichloroe	6.51	0.00	--	96.0	0	1.5662	0.00
11)	C055	cis-1,2-Dichloroeth	6.51	0.00	--	96.0	0	1.5662	0.00
12)	C050	1,1-Dichloroethane	7.41	0.00	--	63.0	0	3.5281	0.00
13)	C060	Chloroform	9.38	0.00	--	83.0	0	3.5188	0.00
14)	C065	1,2-Dichloroethane	11.96	0.00	--	62.0	0	1.2106	0.00
15)	CS15	D4-1,2-Dichloroetha	10.19	10.19	.00	65.0	132752	2.0620	48.49
16)	*C110	1,4-Difluorobenzene	11.17	11.18	.01	114.0	239801	1.0000	50.00
17)	C125	Vinyl Acetate	7.78	0.00	--	43.0	0	.8398	0.00
18)	C110	2-Butanone	8.81	0.00	--	43.0	0	.2442	0.00
19)	C115	1,1,1-Trichloroetha	9.55	0.00	--	97.0	0	.8658	0.00
20)	C120	Carbon Tetrachlorid	9.89	0.00	--	117.0	0	.7819	0.00
21)	C165	Benzene	10.25	10.25	.00	78.0	792	1.3553	.12
22)	C150	Trichloroethene	11.56	0.00	--	130.0	0	.4403	0.00
23)	C140	1,2-Dichloropropane	11.96	0.00	--	63.0	0	.4596	0.00
24)	C130	Bromodichloromethan	12.59	0.00	--	83.0	0	.9340	0.00
25)	C175	2-Chloroethylvinyle	13.49	0.00	--	63.0	0	.0036	0.00
26)	C143	Cis-1,3-Dichloropro	13.47	0.00	--	75.0	0	.8147	0.00
27)	C172	Trans-1,3-Dichlorop	14.62	0.00	--	75.0	0	.6161	0.00
28)	C160	1,1,2-Trichloroetha	14.92	0.00	--	97.0	0	.4692	0.00
29)	C155	Dibromochloromethan	15.62	0.00	--	129.0	0	.8117	0.00
30)	*C120	D5-Chlorobenzene	16.75	16.74	.01	117.0	236591	1.0000	50.00
31)	CS05	D8-Toluene	13.90	13.92	.02	98.0	328763	1.3952	49.80
32)	C205	4-Methyl-2-Pentanon	13.88	13.92	.04	43.0	5594	.4375	2.70
33)	C230	Toluene	14.02	14.02	.00	92.0	508	.9182	.12
34)	C210	2-Hexanone	15.55	0.00	--	43.0	0	.2334	0.00
35)	C220	Tetrachloroethene	15.07	0.00	--	164.0	0	.5556	0.00
36)	C235	Chlorobenzene	16.78	0.00	--	112.0	0	1.1615	0.00
37)	C240	Ethylbenzene	17.11	17.13	.02	106.0	1830	.5453	.71
37)D	C240	Ethylbenzene	17.11	17.39	.28	106.0	250318	.5453	97.02
38)D	CXXX	Xylene (m,p)	17.37	17.13	.24	106.0	1830	.8031	.48
38)	CXXX	Xylene (m,p)	17.37	17.39	.02	106.0	250318	.8031	65.87
39)	CXXX	Xylenes (o)	18.17	17.39	.77	106.0	250318	.7643	69.21
39)D	CXXX	Xylenes (o)	18.17	19.04	.87	106.0	1051	.7643	.29
40)	C245	Styrene	18.23	0.00	--	104.0	0	1.3626	0.00
41)	C180	Bromoform	18.48	0.00	--	173.0	0	.6009	0.00
42)	C225	1,1,2,2-Tetrachloro	19.73	19.75	.02	83.0	1289	.5886	.46
43)	CS10	Bromofluorobenzene	19.26	19.28	.02	95.0	179874	.8022	47.39
43)D	CS10	Bromofluorobenzene	19.26	19.63	.38	95.0	719	.8022	.19
44)	C335	Dichlorobenzene (m	21.58	0.00	--	146.0	0	1.2765	0.00
45)	C340	Dichlorobenzene (p	21.80	0.00	--	146.0	0	1.3643	0.00
46)	C350	Dichlorobenzene (o	22.55	0.00	--	146.0	0	1.2780	0.00
47)D	C250	Xylene (Total)	17.37	17.13	.24	106.0	1830	.7919	.49

[illegible]	C250	Xylene (Total)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
47)D	C250	Xylene (Total)	17.37	20.35	2.98	106.0	2122	.7919	.57
47)D	C250	Xylene (Total)	17.37	21.12	3.75	106.0	13565	.7919	3.62

* - Compound is an Internal Standard
D - Compound Qdel'ed

TOTAL ION CHROMATOGRAM

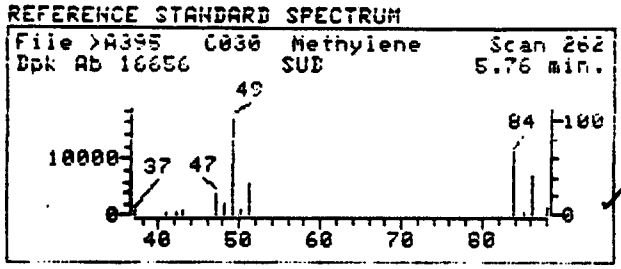


Data File: >A414::D3 Quant Output File: ^A414::QU
Name: GEO 4858-2 500UL
Misc: V3 C1 5ULQC33G

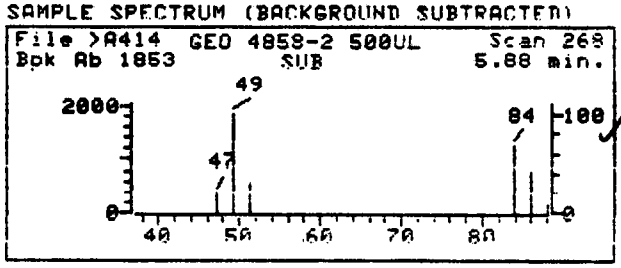
Id File: VOAID3::$$
Title: HSL VOLATILES:30mx.53mm:DB624:V3:ERCO/ENSECO
Last Calibration: 891108 10:52

Operator ID: GREG
Quant Time: 891108 15:07
Injected at: 891108 14:34

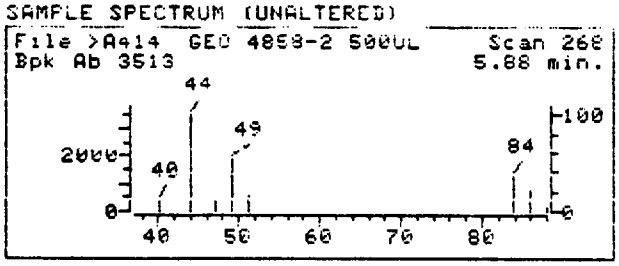
REFERENCE STANDARD SPECTRUM

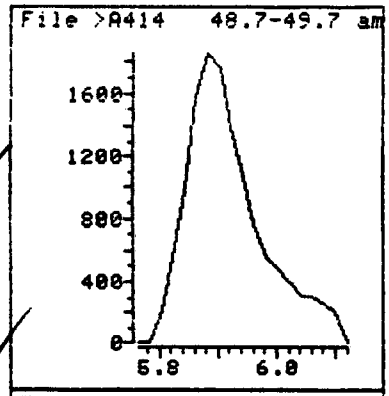


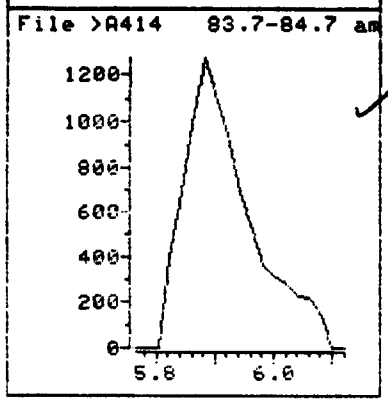
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







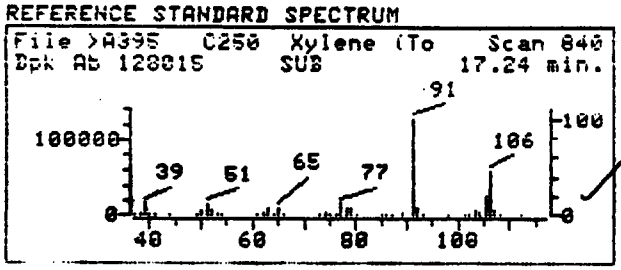
Data File: >A414::D3
Name: GEO 4858-2 500UL
Misc: V3 C1 5ULQC33G
Quant Time: 891108 15:07
Injected at: 891108 14:34

Quant Output File: ^A414::QO

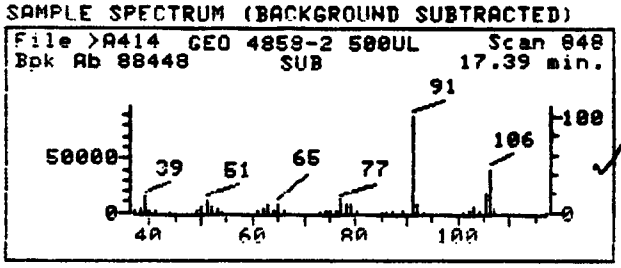
Quant ID File: VOAID3::$$
Last Calibration: 891108 10:52

Compound No: 9
Compound Name: C030 Methylene Chloride
Scan Number: 268
Retention Time: 5.88 min.
Quant Ion: 84.0
Area: 9736
Concentration: 4.08 ug/L
q-value: 95

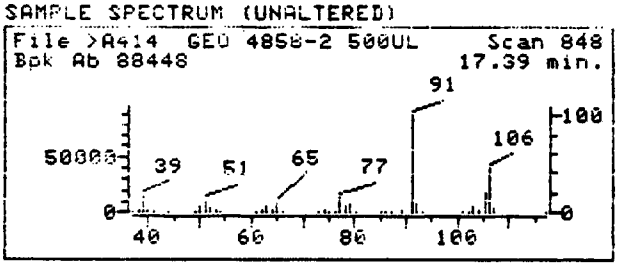
REFERENCE STANDARD SPECTRUM

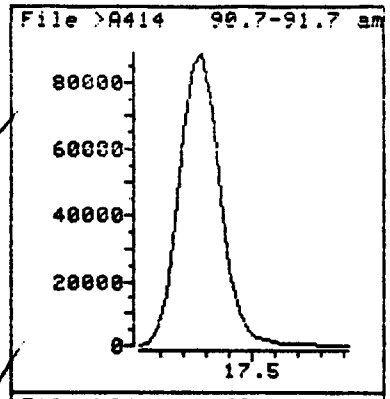


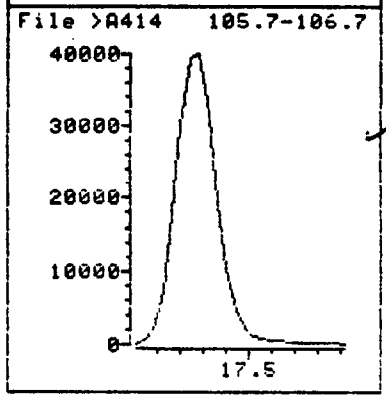
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







Data File: >A414::D3
Name: GEO 4858-2 500UL
Misc: V3 C1 5ULQC33G
Quant Time: 891108 15:07
Injected at: 891108 14:34

Quant Output File: ^A414::QO

Quant ID File: VOAID3::$$
Last Calibration: 891108 10:52

Compound No: 47
Compound Name: C250 Xylene (Total)
Scan Number: 848
Retention Time: 17.39 min.
Quant Ion: 106.0
Area: 250160
Concentration: 66.76 ug/L
q-value: 91

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-3
Lab ID: 004858-0003-SA Enseco ID: 2032154
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 07 NOV 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	1000	
Bromomethane	ND	ug/L	1000	
Vinyl chloride	ND	ug/L	1000	
Chloroethane	ND	ug/L	1000	
Methylene chloride	1400	ug/L	500	B
Acetone	ND	ug/L	1000	
Carbon disulfide	ND	ug/L	500	
1,1-Dichloroethene	ND	ug/L	500	
1,1-Dichloroethane	ND	ug/L	500	
1,2-Dichloroethene (total)	ND	ug/L	500	
Chloroform	ND	ug/L	500	
1,2-Dichloroethane	ND	ug/L	500	
2-Butanone	ND	ug/L	1000	
1,1,1-Trichloroethane	ND	ug/L	500	
Carbon tetrachloride	ND	ug/L	500	
Vinyl acetate	ND	ug/L	1000	
Bromodichloromethane	ND	ug/L	500	
1,2-Dichloropropane	ND	ug/L	500	
trans-1,3-Dichloropropene	ND	ug/L	500	
Trichloroethene	ND	ug/L	500	
Dibromochloromethane	ND	ug/L	500	
1,1,2-Trichloroethane	ND	ug/L	500	
Benzene	ND	ug/L	500	
cis-1,3-Dichloropropene	ND	ug/L	500	
Bromoform	ND	ug/L	500	
4-Methyl-2-pentanone	ND	ug/L	1000	
2-Hexanone	ND	ug/L	1000	
1,1,2,2-Tetrachloroethane	ND	ug/L	500	
Tetrachloroethene	ND	ug/L	500	
Toluene	ND	ug/L	500	
Chlorobenzene	ND	ug/L	500	
Ethylbenzene	10000	ug/L	500	
Styrene	ND	ug/L	500	
Xylenes (total)	45000	ug/L	500	
1,2-Dichloroethane-d4	100	%	--	
Toluene-d8	105	%	--	
4-Bromofluorobenzene	104	%	--	

Note B : Compound is also detected in the blank.

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-3
Lab ID: 004858-0003-SA Enseco ID: 2032154
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 07 NOV 89

Parameter	Result	Units	Reporting Limit
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

L= 11/6 V5A
R = 11/7 V5B

no c/o

Reduced by : [illegible] Date: 11/8 Data File: >GV285
Reviewed by: [illegible] Date: 11/8 Page: 1

Enseco GC/MS
Target Compound Data Summary Sheet

Sample: GEU 4858-03 50UL
Misc : V5 CH11 5ULQC33G
Injected : 11/07/89 23:04 Units: UG/L
Analyst: GREG Run Factor: 100.000
ID File: VOAID5 Surrogate vol: .005
Quant list threshold: 1.00

Surrogate Spike Recoveries

Compound		Surrogate Amount (ug) Spiked	Measured	% Recovery Measured	QC limits
C515	D4-1,2-Dichloroethane	.2500	.2504	100	76 114
C505	D8-Toluene	.2500	.2614	105	88 110
C510	Bromofluorobenzene (BFB)	.2500	.2602	104	86 115

Target Compounds: VOAID5

Scan #	Concentration Quant List UG/L	Sample UG/L		Compound
		BDL	C010	Chloromethane
		BDL	C015	Bromomethane
		BDL	C020	Vinyl Chloride
		BDL *	C025	Chloroethane
66	14.157	~~BDL~~ 1400	C030	Methylene Chloride
		BDL	C035	Acetone
		BDL	C040	Carbon Disulfide
		BDL	C045	1,1-Dichloroethene
		BDL	C050	1,1-Dichloroethane
		BDL	C053	Trans-1,2-Dichloroethene
		BDL	C060	Chloroform
		BDL	C065	1,2-Dichloroethane
		BDL	C110	2-Butanone
		BDL	C115	1,1,1-Trichloroethane
		BDL	C120	Carbon Tetrachloride
		BDL	C125	Vinyl Acetate
		BDL	C130	Bromodichloromethane
203	1.032	BRL ~~100~~	C140	1,2-Dichloropropane
		BDL	C143	Cis-1,3-Dichloropropene
		BDL	C150	Trichloroethene
		BDL	C155	Dibromochloromethane
		BDL	C160	1,1,2-Trichloroethane
		BDL	C165	Benzene
		BDL	C172	Trans-1,3-Dichloropropen
		BDL	C175	2-Chloroethylvinylether
		BDL	C180	Bromoform
		BDL	C205	4-Methyl-2-Pentanone

Data file: >GV285 Page: 2
Sample: GEO 4858-03 50UL

Scan #	Concentration Quant list UG/L	Concentration Sample UG/L		Compound
		BDL	C210	2-Hexanone
		BDL	C220	Tetrachloroethene
		BDL	C225	1,1,2,2-Tetrachloroethan
		BDL	C230	Toluene
		BDL	C235	Chlorobenzene
355	100.310	10000	C240	Ethylbenzene
399	286.499	~~29000~~	CXXX	Xylene (m)
399	9.102	~~910~~	C245	Styrene
408	148.184	~~15000~~	CXXX	Xylenes (o , p)
408	~~143.620~~	~~14000~~	C250	Xylene (Total)
	450.07	45,000		

11/8/89

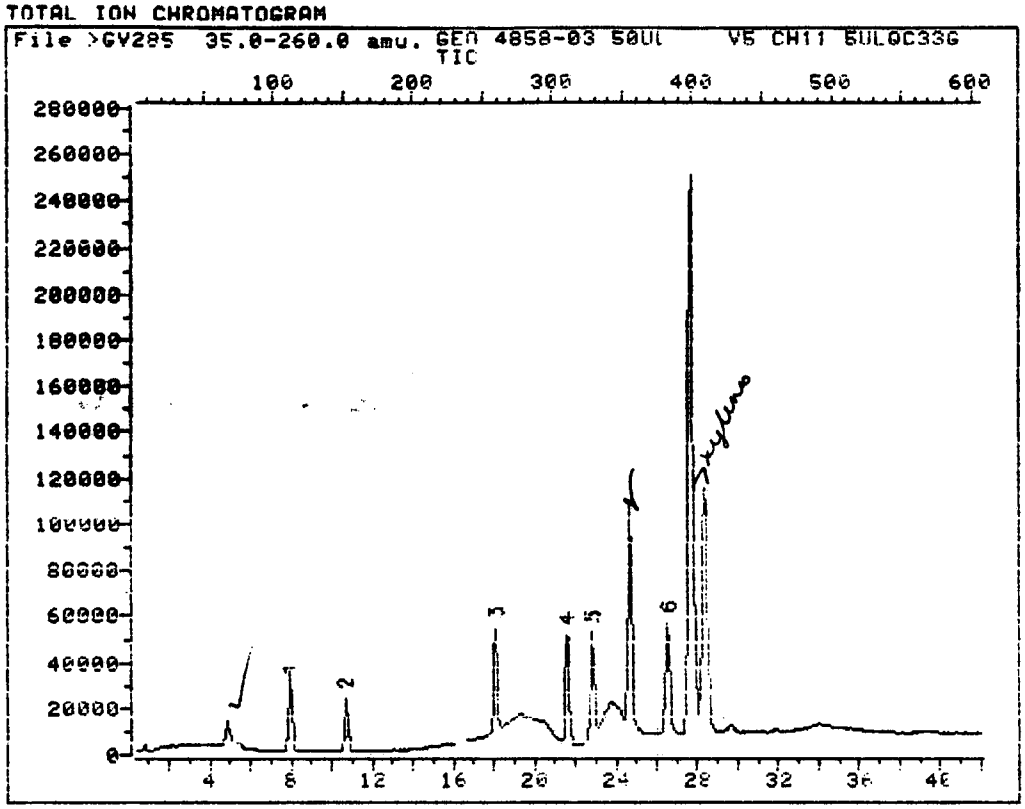
Diagnostic Quant Report

Data File: >GV285::D6 Injected at: 23:04 11/07/89
Quant'd : 23:47 11/07/89
ID File : VOAID5::$$ Calibrated : 19:07 11/07/89

Compound			- R.T. Info - Pred	Found	Dif	Ion	Area	RF	Conc.
1)	*CI01	Bromochloromethane	7.90	7.91	.01	128.0	44262	1.0000	50.00
2)	C010	Chloromethane	1.09	0.00	--	50.0	0	.8690	0.00
3)	C015	Bromomethane	1.71	0.00	--	94.0	0	1.7317	0.00
4)	C020	Vinyl Chloride	2.19	0.00	--	62.0	0	1.2355	0.00
5)	C025	Chloroethane	2.88	0.00	--	64.0	0	1.0142	0.00
6)	C030	Methylene Chloride	4.67	4.81	.14	84.0	25793	2.0581	14.16
7)	C035	Acetone	5.36	0.00	--	43.0	0	.3835	0.00
8)	C040	Carbon Disulfide	6.05	0.00	--	76.0	0	3.3511	0.00
9)	C045	1,1-Dichloroethene	7.42	0.00	--	96.0	0	1.3879	0.00
10)	C050	1,1-Dichloroethane	8.66	0.00	--	63.0	0	3.3138	0.00
11)	C053	Trans-1,2-Dichloroe	9.42	0.00	--	96.0	0	1.3261	0.00
12)	C060	Chloroform	10.11	0.00	--	83.0	0	3.4674	0.00
13)	C065	1,2-Dichloroethane	10.80	0.00	--	62.0	0	2.5668	0.00
14)	C515	D4-1,2-Dichloroetha	10.73	10.66	.07	65.0	102769	2.3181	50.08
15)	*C110	1,4-Difluorobenzene	18.08	18.09	.01	114.0	167697	1.0000	50.00
16)	C110	2-Butanone	10.72	0.00	--	43.0	0	.1767	0.00
17)	C115	1,1,1-Trichloroetha	11.96	0.00	--	97.0	0	.6057	0.00
18)	C120	Carbon Tetrachlorid	12.38	0.00	--	117.0	0	.5699	0.00
19)	C125	Vinyl Acetate	12.65	0.00	--	43.0	0	.8644	0.00
20)	C130	Bromodichloromethan	13.00	0.00	--	83.0	0	.7578	0.00
21)	C140	1,2-Dichloropropane	14.24	14.24	.00	63.0	1676	.4842	1.03
22)	C143	Cis-1,3-Dichloropro	14.58	0.00	--	75.0	0	.6735	0.00
23)	C150	Trichloroethene	15.13	0.00	--	130.0	0	.3983	0.00
24)	C155	Dibromochloromethan	15.75	0.00	--	129.0	0	.5670	0.00
25)	C160	1,1,2-Trichloroetha	15.89	0.00	--	97.0	0	.3409	0.00
26)	C165	Benzene	15.54	15.54	.00	78.0	1085	.9639	.34
27)	C172	Trans-1,3-Dichlorop	15.82	0.00	--	75.0	0	.5038	0.00
28)	C175	2-Chloroethylvinyle	16.85	0.00	--	63.0	0	.1137	0.00
29)	C180	Bromoform	18.37	0.00	--	173.0	0	.3735	0.00
30)	*C120	D5-Chlorobenzene	22.83	22.84	.01	117.0	139470	1.0000	50.00
31)	C205	4-Methyl-2-Pentanon	18.78	0.00	--	43.0	0	.4656	0.00
32)	C210	2-Hexanone	20.29	0.00	--	43.0	0	.3015	0.00
33)	C220	Tetrachloroethene	20.64	0.00	--	164.0	0	.4191	0.00
34)	C225	1,1,2,2-Tetrachloro	20.70	0.00	--	83.0	0	.6532	0.00
35)	C230	Toluene	21.81	21.81	.00	92.0	1375	.7408	.67
36)	CS05	D8-Toluene	21.67	21.60	.07	98.0	190476	1.3064	52.27
37)	C235	Chlorobenzene	22.98	0.00	--	112.0	0	.9621	0.00
38)	C240	Ethylbenzene	24.70	24.70	.00	106.0	124133	.4436	100.31
39)	CXXX	Xylene (m)	27.73	27.73	.00	106.0	523939	.6556	286.50
39)D	CXXX	Xylene (m)	27.73	28.35	.62	106.0	241547	.6556	132.09
40)	C245	Styrene	27.52	27.73	.21	104.0	24896	.9806	9.10
40)D	CXXX	Xylenes (o , p)	28.35	27.73	.62	106.0	523939	.5958	315.27
41)	CXXX	Xylenes (o , p)	28.35	28.35	.00	106.0	246263	.5958	148.18
42)	CS10	Bromofluorobenzene	26.56	26.56	.00	95.0	141794	.9769	52.04
43)D	C250	Xylene (Total)	28.35	24.70	3.65	106.0	123224	.6148	71.85
43)D	C250	Xylene (Total)	28.35	27.73	.62	106.0	523666	.6148	305.36
43)	C250	Xylene (Total)	28.35	28.35	.00	106.0	246296	.6148	143.62

* - Compound is an Internal Standard
D - Compound Wdel'ed

TOTAL ION CHROMATOGRAM

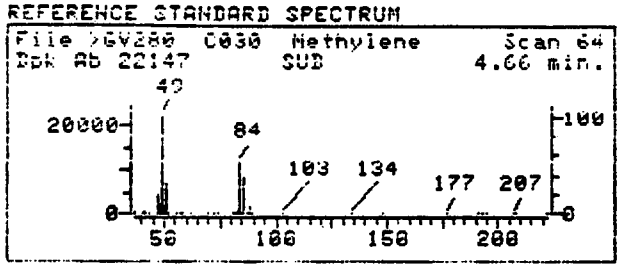


Data File: >GV285::D6 Quant Output File: ^GV285::QO
Name: GEO 4858-03 50UL
Misc: V5 CH11 50LQC33G

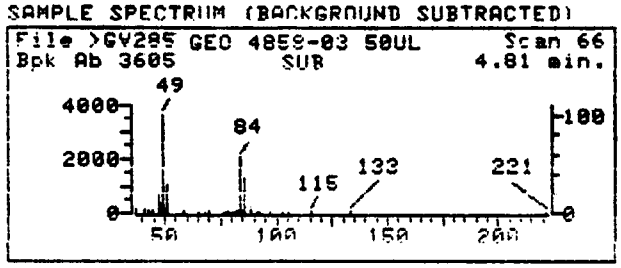
Id File: VOA1D5::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8°/MIN:GCMS V5:ERCO/ENSECO
Last Calibration: 891107 19:07

Operator ID: GREG
Quant Time: 891107 23:47
Injected at: 891107 23:04

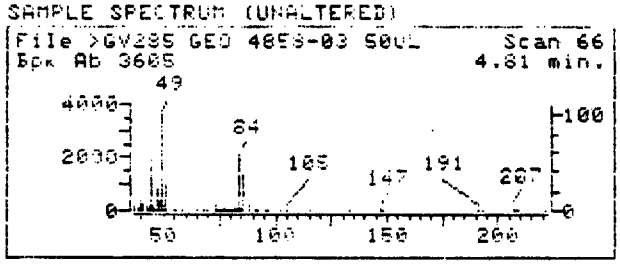
REFERENCE STANDARD SPECTRUM

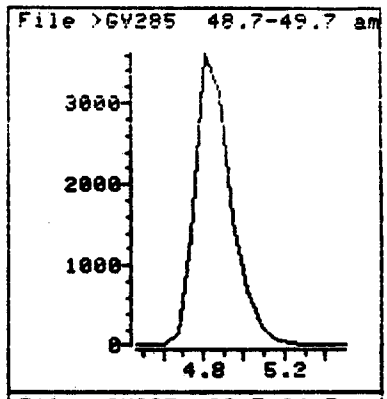


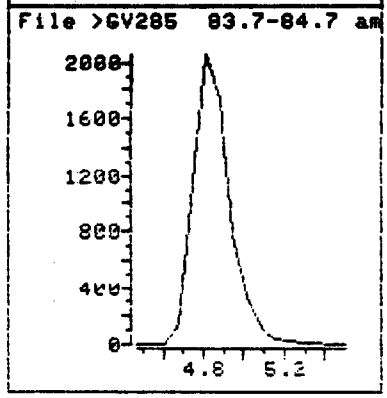
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)



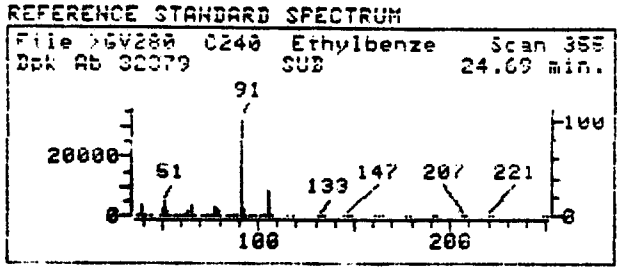




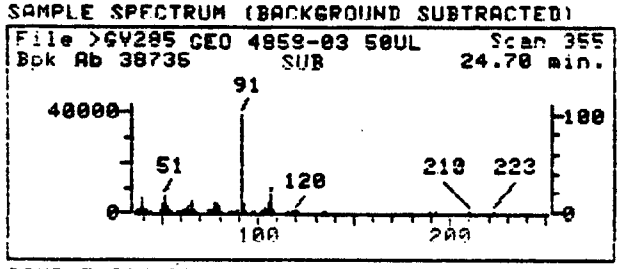
Data File: >GV285::06 Quant Output File: ^GV285::QO
Name: GEO 4858-03 50UL
Misc: V5 CH11 5ULQL336
Quant Time: 891107 23:47 Quant ID File: VOAID5::$$
Injected at: 891107 23:04 Last Calibration: 891107 19:07

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 66
Retention Time: 4.81 min.
Quant Ion: 84.0
Area: 25793
Concentration: 14.16 ug/L
q-value: 89

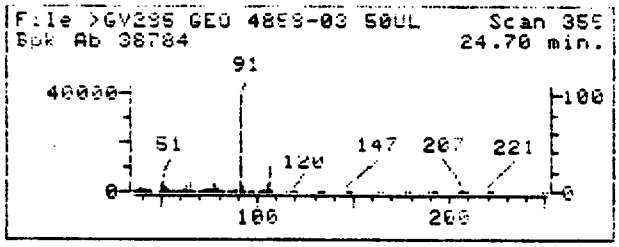
REFERENCE STANDARD SPECTRUM

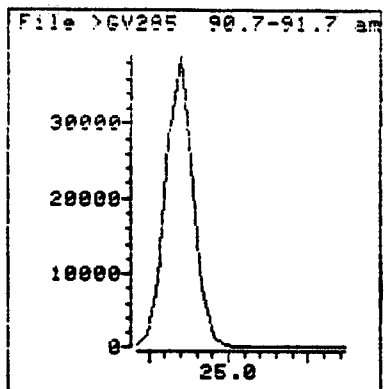


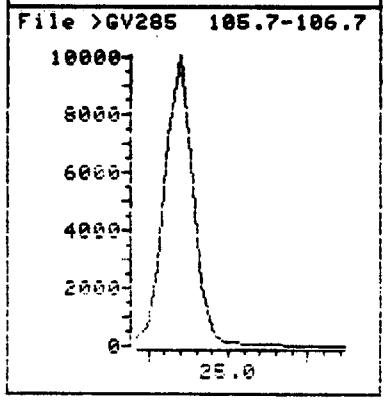
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







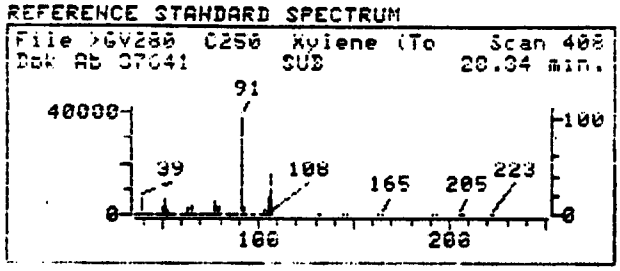
Data File: >GV285::D6
Name: GEO 4858-03 50UL
Misc: V5 LH11 5ULQC356
Quant Time: 891107 23:47
Injected at: 891107 23:04

Quant Output File: ^GV285::QL

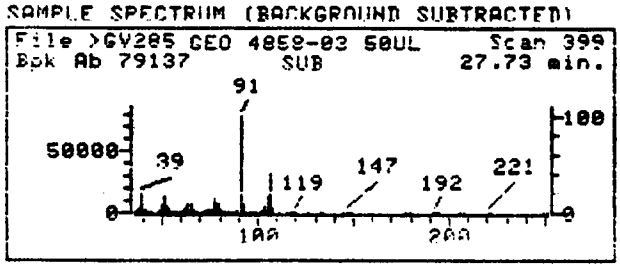
Quant ID File: VOAID5::$$
Last Calibration: 891107 19:07

Compound No: 38
Compound Name: C240 Ethylbenzene
Scan Number: 355
Retention Time: 24.70 min.
Quant Ion: 106.0
Area: 124133
Concentration: 100.31 ug/L
q-value: 92

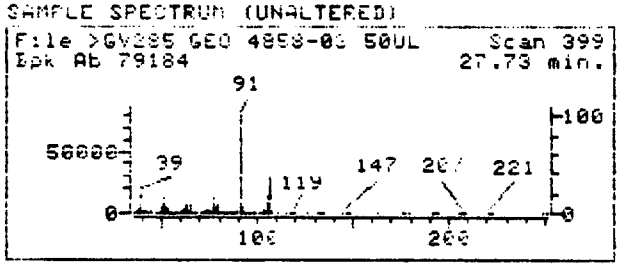
REFERENCE STANDARD SPECTRUM

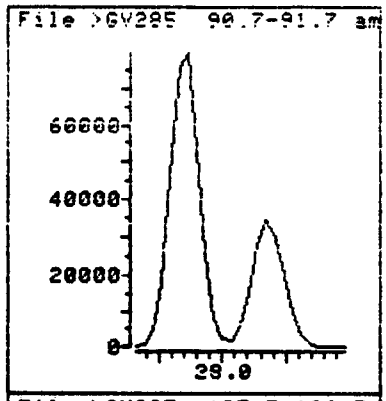


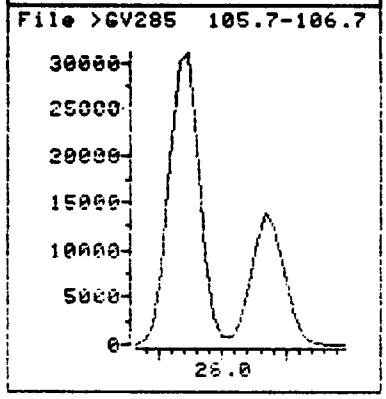
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







Data File: >GV285::U6
Name: GEO 4858-03 50UL
Misc: V5 CH11 50ULQC336
Quant Time: 891107 23:47
Injected at: 891107 23:04

Quant Output File: ^GV285::QU

Quant ID File: VOAID5::$$
Last Calibration: 891107 19:0

Compound No: 4
Compound Name: C250 Xylene (Total)
Scan Number: 399
Retention Time: 27.73 min.
Quant Ion: 106.0
Area: 771833M
Concentration: 450.07 ug/L
q-value: 99

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-4
Lab ID: 004858-0004-SA Enseco ID: 2032155
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	1.9	ug/L	5.0	JB
Acetone	ND	ug/L	10	
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethylbenzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylenes (total)	2.3	ug/L	5.0	J
1,2-Dichloroethane-d4	97.3	%	--	
Toluene-d8	97.0	%	--	
4-Bromofluorobenzene	91.6	%	--	

(continued on following page)

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS (CONT.)
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-4
Lab ID: 004858-0004-SA Enseco ID: 2032155
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Note J : Result is detected below the reporting limit or is an estimated concentration.

Note B : Compound is also detected in the blank.

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-4
Lab ID: 004858-0004-SA Enseco ID: 2032155
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

D - Compound Quantified

C/O - A414
- A410

110889V3A A412
A413

110889V3A - A410

Reduced by : MA Date: 110889.
Reviewed by: CC Date: 11/9

Data File: >A415
Page: 1

Acetone - 7.68
MeCl - 5.35

Enseco GC/MS
Target Compound Data Summary Sheet

Sample: GEO 4858-4 5ML
Misc : V3 C2 5ULQC33G
Injected : 11/08/89 15:14
Analyst: GREG
ID File: VOAID3
Quant list threshold: 1.00

Units: UG/L
Run Factor: 1.000
Surrogate vol: .005

Surrogate Spike Recoveries

Compound		Surrogate Amount (ug) Spiked	Measured	% Recovery Measured	QC limits
CS15	D4-1,2-Dichloroethane	.2500	.2432	97.3	76 114
CS05	D8-Toluene	.2500	.2425	97.0	88 110
CS10	Bromofluorobenzene (BFB)	.2500	.2291	91.6	86 115

Target Compounds: VOAID3

Scan #	Concentration Quant List UG/L	Sample UG/L		Compound
		BDL	C010	Chloromethane
		BDL	C020	Vinyl Chloride
		BDL	C015	Bromomethane
		BDL	C025	Chloroethane
		BDL	C045	1,1-Dichloroethene
		BDL	C035	Acetone
		BDL	C040	Carbon Disulfide
268	1.946	1.9	C030	Methylene Chloride
		BDL	C053	Trans-1,2-Dichloroethene
		BDL	C055	cis-1,2-Dichloroethene
		BDL	C050	1,1-Dichloroethane
		BDL	C060	Chloroform
		BDL	C065	1,2-Dichloroethane
		BDL	C125	Vinyl Acetate
		BDL	C110	2-Butanone
		BDL	C115	1,1,1-Trichloroethane
		BDL	C120	Carbon Tetrachloride
		BDL	C165	Benzene
		BDL	C150	Trichloroethene
		BDL	C140	1,2-Dichloropropane
		BDL	C130	Bromodichloromethane
		BDL	C175	2-Chloroethylvinylether
		BDL	C143	Cis-1,3-Dichloropropen
		BDL	C172	Trans-1,3-Dichloropropen
		BDL	C160	1,1,2-Trichloroethane
		BDL	C155	Dibromochloromethane
		BDL	C205	4-Methyl-2-Pentanone

CS8#

Data file: >A415 Page: 2
Sample: GEO 4858-4 5ML

Scan #	Concentration Quant list UG/L	Sample UG/L		Compound
		BDL	C230	Toluene
		BDL	C210	2-Hexanone
		BDL	C220	Tetrachloroethene
		BDL	C235	Chlorobenzene
847	1.366	~~1.4~~	C240	Ethylbenzene
		BDL	CXXX	Xylene (m,p)
887	1.445	~~1.4~~	CXXX	Xylenes (o)
		BDL	C245	Styrene
		BDL	C180	Bromoform
		BDL	C225	1,1,2,2-Tetrachloroethan
		BDL	C335	Dichlorobenzene (m)
		BDL	C340	Dichlorobenzene (p)
		BDL	C350	Dichlorobenzene (o)
	2.34	BDL	C250	Xylene (Total)

2.3

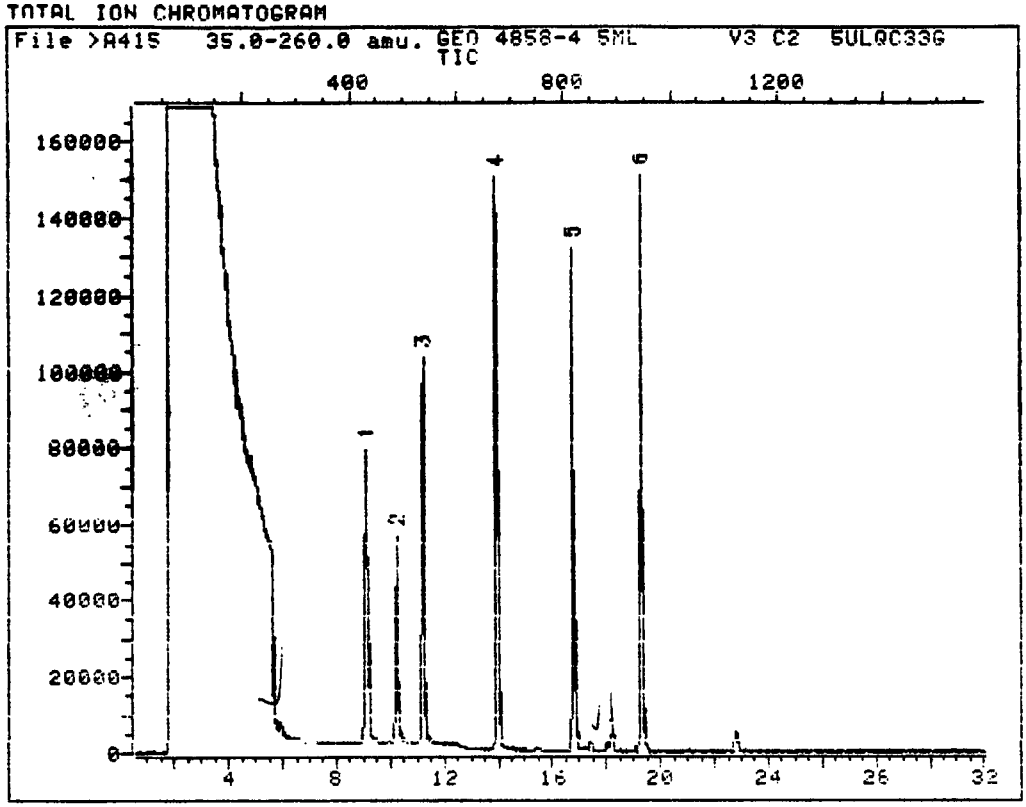
Diagnostic Quant Report

Data File: >A415 ::D3 Injected at: 15:14 11/08/89
Quant'd : 15:47 11/08/89
ID File : VOAID3::$$ Calibrated : 10:52 11/08/89

		Compound	- R.T. Info - Pred	Found	Dif	Ion	Area	RF	Conc.
1)	*CI01	Bromochloromethane	9.04	9.06	.02	128.0	67024	1.0000	50.00
2)	C010	Chloromethane	2.26	0.00	--	50.0	0	1.8334	0.00
3)	C020	Vinyl Chloride	2.46	0.00	--	62.0	0	1.7100	0.00
4)	C015	Bromomethane	2.93	0.00	--	94.0	0	1.4453	0.00
5)	C025	Chloroethane	3.17	0.00	--	64.0	0	.9110	0.00
6)	C045	1,1-Dichloroethene	4.65	0.00	--	96.0	0	1.6388	0.00
7)	C035	Acetone	4.98	0.00	--	43.0	0	.5902	0.00
8)	C040	Carbon Disulfide	4.90	0.00	--	76.0	0	4.3072	0.00
9)	C030	Methylene Chloride	5.90	5.89	.01	84.0	4686	1.7964	1.95
10)	C053	Trans-1,2-Dichloroe	6.52	0.00	--	96.0	0	1.5662	0.00
11)	C055	cis-1,2-Dichloroeth	6.52	0.00	--	96.0	0	1.5662	0.00
12)	C050	1,1-Dichloroethane	7.41	0.00	--	63.0	0	3.5281	0.00
13)	C060	Chloroform	9.38	0.00	--	83.0	0	3.5188	0.00
14)	C065	1,2-Dichloroethane	11.97	0.00	--	62.0	0	1.2106	0.00
15)	CS15	D4-1,2-Dichloroetha	10.20	10.20	.00	65.0	134437	2.0620	48.64
16)	*C110	1,4-Difluorobenzene	11.17	11.19	.02	114.0	235613	1.0000	50.00
17)	C125	Vinyl Acetate	7.79	0.00	--	43.0	0	.8398	0.00
18)	C110	2-Butanone	8.82	0.00	--	43.0	0	.2442	0.00
19)	C115	1,1,1-Trichloroetha	9.56	0.00	--	97.0	0	.8658	0.00
20)	C120	Carbon Tetrachlorid	9.85	0.00	--	117.0	0	.7819	0.00
21)	C165	Benzene	10.25	0.00	--	78.0	0	1.3553	0.00
22)	C150	Trichloroethene	11.57	0.00	--	130.0	0	.4403	0.00
23)	C140	1,2-Dichloropropane	11.96	0.00	--	63.0	0	.4596	0.00
24)	C130	Bromodichloromethan	12.60	0.00	--	83.0	0	.9340	0.00
25)	C175	2-Chloroethylvinyle	13.50	0.00	--	63.0	0	.0036	0.00
26)	C143	Cis-1,3-Dichloropro	13.48	0.00	--	75.0	0	.8147	0.00
27)	C172	Trans-1,3-Dichlorop	14.63	0.00	--	75.0	0	.6161	0.00
28)	C160	1,1,2-Trichloroetha	14.93	0.00	--	97.0	0	.4692	0.00
29)	C155	Dibromochloromethan	15.63	0.00	--	129.0	0	.8117	0.00
30)	*C120	D5-Chlorobenzene	16.75	16.74	.01	117.0	234699	1.0000	50.00
31)	CS05	D8-Toluene	13.90	13.91	.00	98.0	317617	1.3952	48.50
32)	C205	4-Methyl-2-Pentanon	13.88	0.00	--	43.0	0	.4375	0.00
33)	C230	Toluene	14.02	0.00	--	92.0	0	.9182	0.00
34)	C210	2-Hexanone	15.55	0.00	--	43.0	0	.2334	0.00
35)	C220	Tetrachloroethene	15.08	0.00	--	164.0	0	.5556	0.00
36)	C235	Chlorobenzene	16.78	0.00	--	112.0	0	1.1615	0.00
37)	C240	Ethylbenzene	17.12	17.38	.26	106.0	3497	.5453	1.37
38)	CXXX	Xylene (m,p)	17.38	17.38	.00	106.0	3497	.8031	.93
39)D	CXXX	Xylenes (o)	18.17	17.38	.80	106.0	3497	.7643	.97
39)	CXXX	Xylenes (o)	18.17	18.17	.00	106.0	5185	.7643	1.45
40)	C245	Styrene	18.23	0.00	--	104.0	0	1.3626	0.00
41)	C180	Bromoform	18.49	0.00	--	173.0	0	.6009	0.00
42)	C225	1,1,2,2-Tetrachloro	19.74	0.00	--	83.0	0	.5886	0.00
43)	CS10	Bromofluorobenzene	19.27	19.26	.00	95.0	172544	.8022	45.82
44)	C335	Dichlorobenzene (m	21.59	0.00	--	146.0	0	1.2765	0.00
45)	C340	Dichlorobenzene (p	21.81	0.00	--	146.0	0	1.3643	0.00
46)	C350	Dichlorobenzene (o	22.56	0.00	--	146.0	0	1.2780	0.00
47)	C250	Xylene (Total)	17.38	17.38	.00	106.0	3497	.7919	.94
47)D	C250	Xylene (Total)	17.38	18.17	.79	106.0	5185	.7919	1.39

* - Compound is an Internal Standard

TOTAL ION CHROMATOGRAM

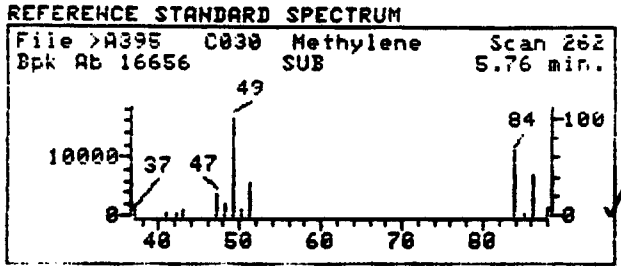


Data File: >A415::D3 Quant Output File: ^A415::QU
Name: GEO 4858-4 5ML
Misc: V3 C2 5ULQC33G

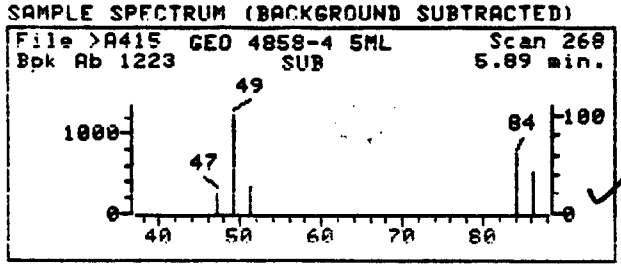
Id File: VOAID3::$$
Title: HSL VOLATILES:30mx.53mm:DB624:V3:ERCO/ENSECO
Last Calibration: 891108 10:52

Operator ID: GREG
Quant Time: 891108 15:47
Injected at: 891108 15:14

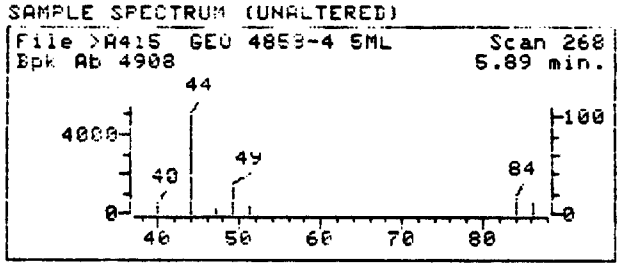
REFERENCE STANDARD SPECTRUM

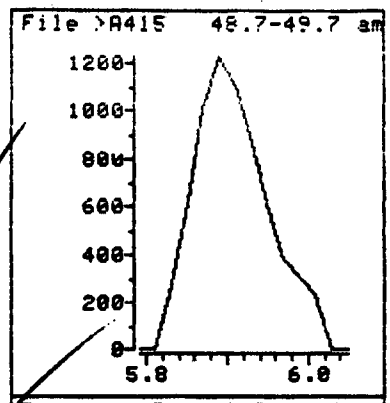


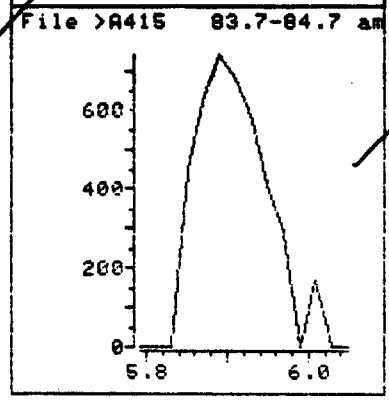
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







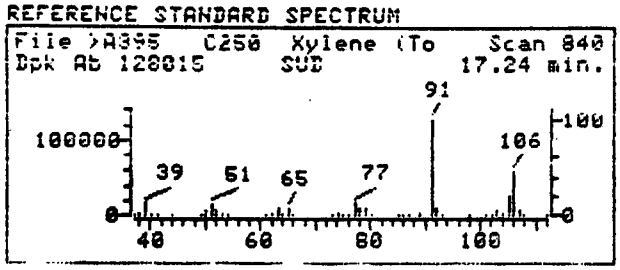
Data File: >A415::D3
Name: GEO 4858-4 5ML
Misc: V3 C2 5ULQC33G
Quant Time: 891108 15:47
Injected at: 891108 15:14

Quant Output File: ^A415::QU

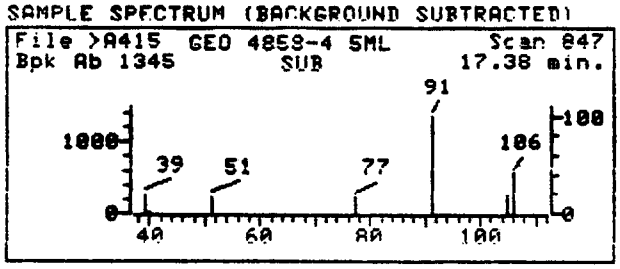
Quant ID File: VOAID3::$$
Last Calibration: 891108 10:52

Compound No: 9
Compound Name: C030 Methylene Chloride
Scan Number: 268
Retention Time: 5.89 min.
Quant Ion: 84.0
Area: 4686
Concentration: 1.95 ug/L
q-value: 94

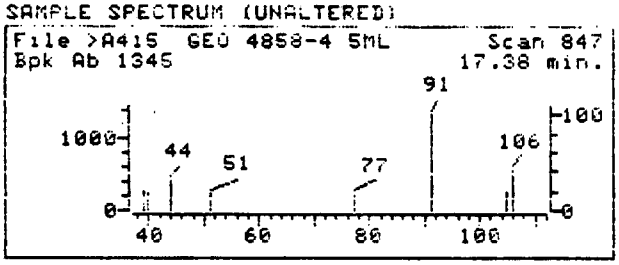
REFERENCE STANDARD SPECTRUM

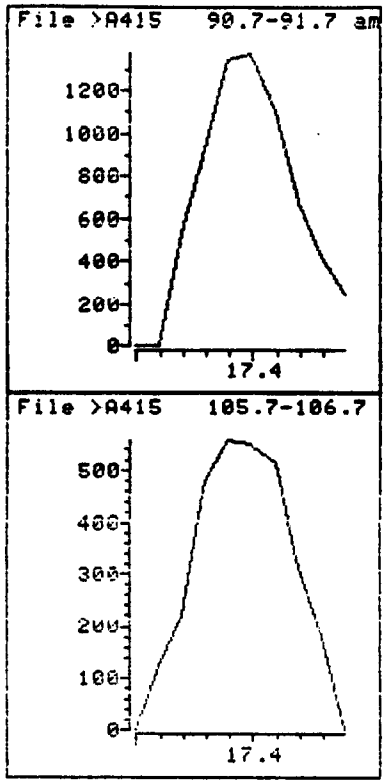


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >A415::D3
Name: GEO 4858-4 5ML
Misc: V3 C2 5ULQC336
Quant Time: 891108 15:47
Injected at: 891108 15:14

Quant Output File: ^A415::QO
Quant ID File: VOAID3::$$
Last Calibration: 891108 10:52

Compound No: 47
Compound Name: C250 Xylene (Total)
Scan Number: 847
Retention Time: 17.38 min.
Quant Ion: 106.0
Area: 3497
Concentration: .94 ug/L BDL
q-value: 97

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-5
Lab ID: 004858-0005-SA Enseco ID: 2032156
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	8.3	ug/L	5.0	B
Acetone	ND	ug/L	10	
Carbon disulfide	2.8	ug/L	5.0	J
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethylbenzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylenes (total)	ND	ug/L	5.0	
1,2-Dichloroethane-d4	98.8	%	--	
Toluene-d8	102	%	--	
4-Bromofluorobenzene	102	%	--	

(continued on following page)

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS (CONT.)
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-5
Lab ID: 004858-0005-SA Enseco ID: 2032156
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Note B : Compound is also detected in the blank.

Note J : Result is detected below the reporting limit or is an estimated concentration.

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: LEC-MW-5
Lab ID: 004858-0005-SA Enseco ID: 2032156
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

L = 11/6 V5A
R = 11/7 V5B

Reduced by : Date: 11/8/89 Data File: >G0287
Reviewed by: Date: 11/9/89 Page: 1

Enseco GC/MS
Target Compound Data Summary Sheet

Sample: GED 4858-05 5ML
Misc : V5 CH13 5ULQC33G
Injected : 11/08/89 00:37 Units: UG/L
Analyst: GREG Run Factor: 1.000
ID File: VOAID5 Surrogate vol: .005
Quant list threshold: 1.00

Surrogate Spike Recoveries

Compound		Surrogate Amount (ug) Spiked	Measured	% Recovery Measured	QC limits
C515	D4-1,2-Dichloroethane	.2500	.2471	98.8	76 114
C505	D8-Toluene	.2500	.2561	102	88 110
C510	Bromofluorobenzene (BFB)	.2500	.2557	102	86 115

Target Compounds: VOAID5

Scan #	Concentration Quant List UG/L	Sample UG/L		Compound
		BDL	C010	Chloromethane
		BDL	C015	Bromomethane
		BDL	C020	Vinyl Chloride
		BDL	C025	Chloroethane
67	8.312	~~JB~~ 8.3	C030	Methylene Chloride
76	10.889	RtOH ~~11~~	C035	Acetone
87	2.833	J 2.8	C040	Carbon Disulfide
		BDL	C045	1,1-Dichloroethene
		BDL	C050	1,1-Dichloroethane
		BDL	C053	Trans-1,2-Dichloroethene
		BDL	C060	Chloroform
		BDL	C065	1,2-Dichloroethane
153	2.322	SNG ~~2.3~~	C110	2-Butanone
		BDL	C115	1,1,1-Trichloroethane
		BDL	C120	Carbon Tetrachloride
		BDL	C125	Vinyl Acetate
		BDL	C130	Bromodichloromethane
		BDL	C140	1,2-Dichloropropane
		BDL	C143	Cis-1,3-Dichloropropene
		BDL	C150	Trichloroethene
		BDL	C155	Dibromochloromethane
		BDL	C160	1,1,2-Trichloroethane
		BDL	C165	Benzene
		BDL	C172	Trans-1,3-Dichloropropen
		BDL	C175	2-Chloroethylvinylether
		BDL	C180	Bromoform
		BDL	C205	4-Methyl-2-Pentanone

Data file: >GV287 Page: 2
Sample: GEU 4858-05 5ML

Scan #	Concentration Quant list UG/L	Sample UG/L	Compound
	BDL	C210	2-Hexanone
	BDL	C220	Tetrachloroethene
	BDL	C225	1,1,2,2-Tetrachloroethan
	BDL	C230	Toluene
	BDL	C235	Chlorobenzene
	BDL	C240	Ethylbenzene
	BDL	CXXX	Xylene (m)
	BDL	C245	Styrene
	BDL	CXXX	Xylenes (o , p)
	BDL	C250	Xylene (Total)

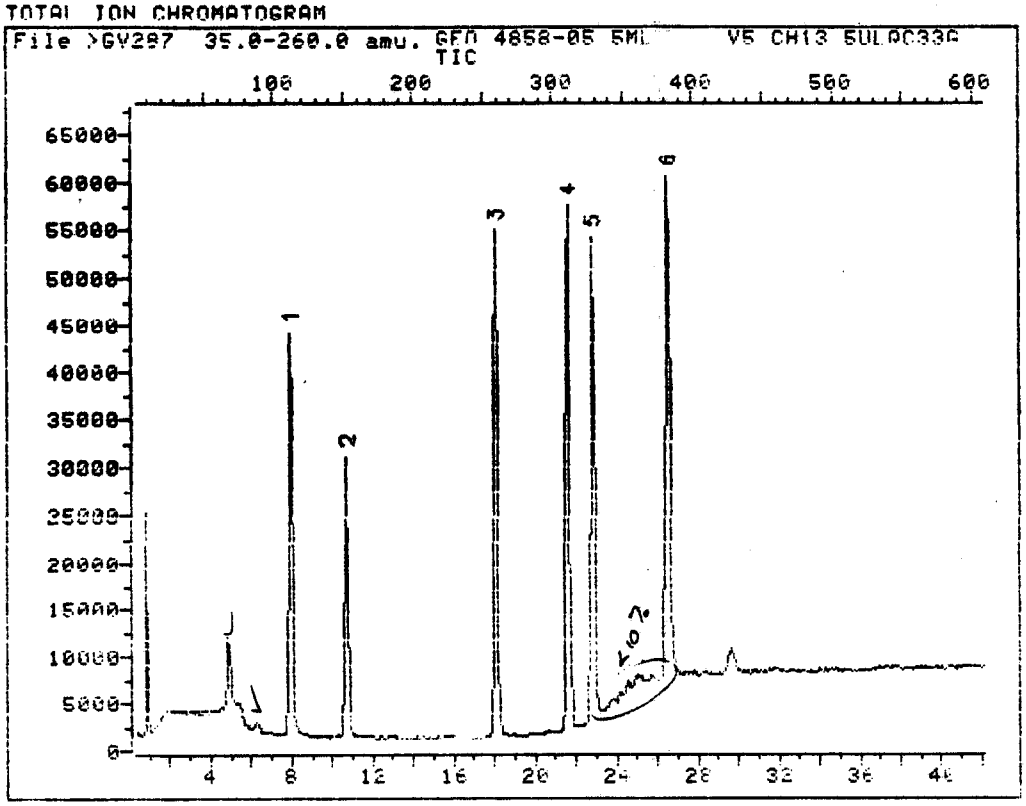
Diagnostic Quant Report

Data File: >GV287::D6 Injected at: 00:37 11/08/89
Quant'd : 01:20 11/08/89
ID File : VOAID5::$$ Calibrated : 19:07 11/07/89

	Compound		- R.T. Info - Pred	Found	Dif	Ion	Area	RF	Conc.
1)	*CI01	Bromochloromethane	7.90	7.97	.07	128.0	53186	1.0000	50.00
2)	C010	Chloromethane	1.10	0.00	--	50.0	0	.8690	0.00
3)	C015	Bromomethane	1.72	0.00	--	94.0	0	1.7317	0.00
4)	C020	Vinyl Chloride	2.21	0.00	--	62.0	0	1.2355	0.00
5)	C025	Chloroethane	2.90	0.00	--	64.0	0	1.0142	0.00
6)	C030	Methylene Chloride	4.70	4.87	.17	84.0	18196	2.0581	8.51
7)	C035	Acetone	5.40	5.49	.09	43.0	4442	.3835	10.89
8)	C040	Carbon Disulfide	6.09	6.25	.15	76.0	10097	3.3511	2.83
9)	C045	1,1-Dichloroethene	7.48	0.00	--	96.0	0	1.3879	0.00
10)	C050	1,1-Dichloroethane	8.73	0.00	--	63.0	0	3.3138	0.00
11)	C053	Trans-1,2-Dichloroe	9.49	0.00	--	96.0	0	1.3261	0.00
12)	C060	Chloroform	10.19	0.00	--	83.0	0	3.4674	0.00
13)	C065	1,2-Dichloroethane	10.88	0.00	--	62.0	0	2.5668	0.00
14)	CS15	D4-1,2-Dichloroetha	10.81	10.72	.09	65.0	121882	2.3181	49.45
15)	*C110	1,4-Difluorobenzene	18.08	18.08	.00	114.0	198090	1.0000	50.00
16)	C110	2-Butanone	10.72	10.79	.07	43.0	1626	.1767	2.32
17)	C115	1,1,1-Trichloroetha	11.96	0.00	--	97.0	0	.6057	0.00
18)	C120	Carbon Tetrachlorid	12.37	0.00	--	117.0	0	.5699	0.00
19)	C125	Vinyl Acetate	12.64	0.00	--	43.0	0	.8644	0.00
20)	C130	Bromodichloromethan	12.99	0.00	--	83.0	0	.7578	0.00
21)	C140	1,2-Dichloropropane	14.23	0.00	--	63.0	0	.4842	0.00
22)	C145	Cis-1,3-Dichloropro	14.57	0.00	--	75.0	0	.6735	0.00
23)	C150	Trichloroethene	15.12	0.00	--	130.0	0	.3983	0.00
24)	C155	Dibromochloromethan	15.74	0.00	--	129.0	0	.5670	0.00
25)	C160	1,1,2-Trichloroetha	15.88	0.00	--	97.0	0	.3409	0.00
26)	C165	Benzene	15.53	0.00	--	78.0	0	.9639	0.00
27)	C172	Trans-1,3-Dichlorop	15.81	0.00	--	75.0	0	.5038	0.00
28)	C175	2-Chloroethylvinyle	16.84	0.00	--	63.0	0	.1137	0.00
29)	C180	Bromoform	18.36	0.00	--	173.0	0	.3735	0.00
30)	*C120	D5-Chlorobenzene	22.83	22.83	.00	117.0	155274	1.0000	50.00
31)	C205	4-Methyl-2-Pentanon	18.77	0.00	--	43.0	0	.4656	0.00
32)	C210	2-Hexanone	20.28	0.00	--	43.0	0	.3015	0.00
33)	C220	Tetrachloroethene	20.63	0.00	--	164.0	0	.4191	0.00
34)	C225	1,1,2,2-Tetrachloro	20.69	0.00	--	83.0	0	.6532	0.00
35)	C230	Toluene	21.80	0.00	--	92.0	0	.7408	0.00
36)	CS05	D8-Toluene	21.66	21.66	.00	98.0	207801	1.3064	51.22
37)	C235	Chlorobenzene	22.97	0.00	--	112.0	0	.9621	0.00
38)	C240	Ethylbenzene	24.69	0.00	--	106.0	0	.4436	0.00
39)	CXXX	Xylene (m)	27.71	27.71	.00	106.0	1044	.6556	.51
40)	C245	Styrene	27.51	0.00	--	104.0	0	.9806	0.00
41)	CXXX	Xylenes (o , p)	28.33	27.71	.62	106.0	1044	.5958	.56
42)	CS10	Bromofluorobenzene	26.54	26.54	.00	95.0	155147	.9769	51.14
43)	C250	Xylene (Total)	28.33	27.71	.62	106.0	1044	.6148	.55

* - Compound is an Internal Standard
D - Compound Qdel'ed

TOTAL ION CHROMATOGRAM

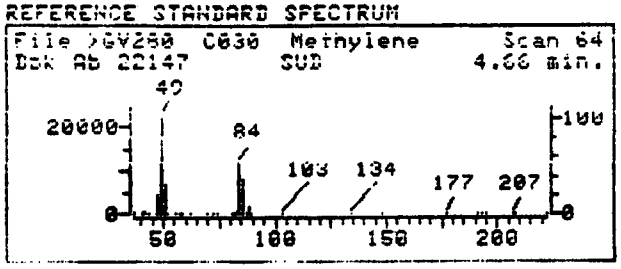


Data File: >GV287::D6 Quant Output File: ^GV287::QO
Name: GEO 4858-05 5ML
Misc: V5 CH13 5ULQC33G

Id File: VOAID5::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V5:ERCO/ENSECO
Last Calibration: 891107 19:07

Operator ID: GREG
Quant Time: 891108 01:20
Injected at: 891108 00:37

REFERENCE STANDARD SPECTRUM



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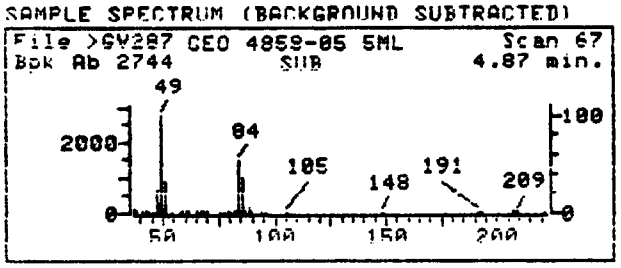

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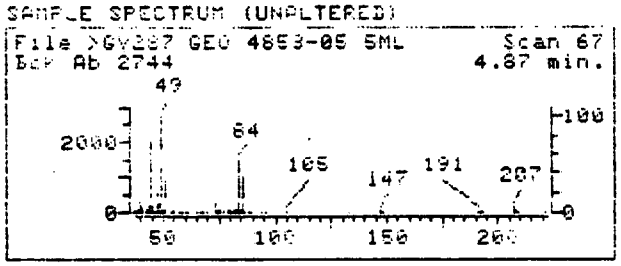
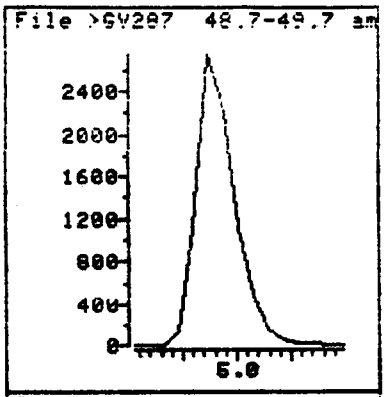
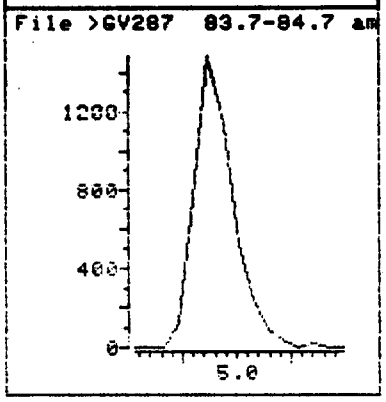


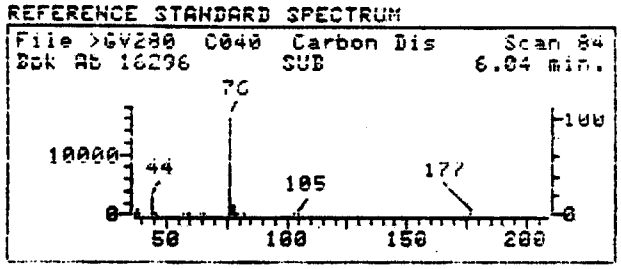




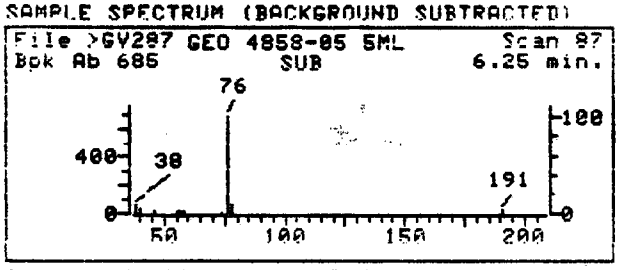
Data File: >GV287::D6 Quant Output File: ^GV287::QO
Name: GEO 4859-05 5ML
Misc: V5 LH13 5ULQC336
Quant Time: 891108 01:20 Quant ID File: VOAID5::$
Injected at: 891108 00:37 Last Calibration: 891107 19:0

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 67
Retention Time: 4.87 min.
Quant Ion: 84.0
Area: 18196
Concentration: 8.31 ug/L
q-value: 85

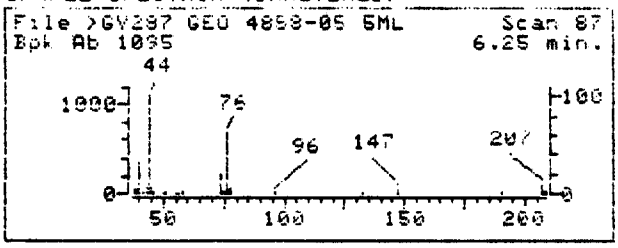
REFERENCE STANDARD SPECTRUM

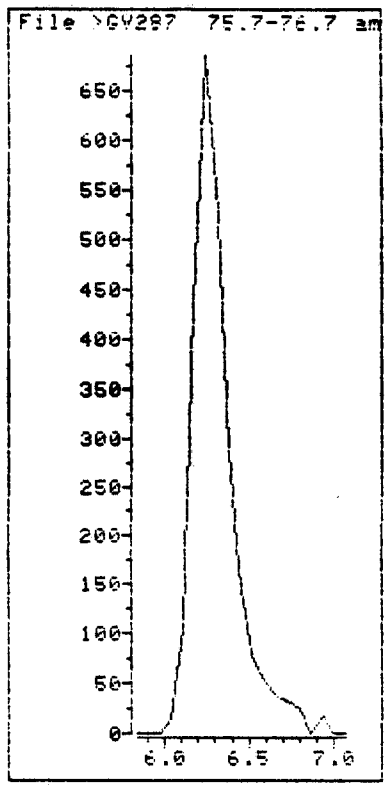


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





Data File: >GV287::D6
Name: GEO 4858-05 5ML
Misc: V5 CH13 5ULQC336
Quant Time: 891108 01:20
Injected at: 891108 00:37

Quant Output File: ^GV287::QD
Quant ID File: VOA1D5::$$
Last Calibration: 891107 19:0

Compound No: 8
Compound Name: C040 Carbon Disulfide
Scan Number: 87
Retention Time: 6.25 min.
Quant Ion: 76.0
Area: 10097
Concentration: 2.83 ug/L
q-value: 100

Enseco
A CORNING Company

TARGET COMPOUND LIST (TCL)
VOLATILE ORGANICS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: Trip blank
Lab ID: 004858-0006-SA Enseco ID: 2032157
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	11	ug/L	5.0	B
Acetone	ND	ug/L	10	
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethylbenzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylenes (total)	ND	ug/L	5.0	
1,2-Dichloroethane-d4	102	%	--	
Toluene-d8	104	%	--	
4-Bromofluorobenzene	103	%	--	

Note B : Compound is also detected in the blank.

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

Enseco
A CORNING Company

VOLATILE ORGANICS
TENTATIVELY IDENTIFIED COMPOUNDS
Method 624

Client Name: GeoEngineering, Inc.
Client ID: Trip blank
Lab ID: 004858-0006-SA Enseco ID: 2032157
Matrix: AQUEOUS Sampled: 01 NOV 89 Received: 03 NOV 89
Authorized: 03 NOV 89 Prepared: NA Analyzed: 08 NOV 89

Parameter	Result	Units	Reporting Limit
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

N.D. = Not Detected
N.A. = Not Applicable

Reported By: Marcia Motta Approved By: Charlene Livingston

L=11/6 VSA
R=11/7 V5B

Reduced by : [illegible] Date: 11/8/89 Data File: >GV288
Reviewed by: [illegible] Date: 11/9/89 Page: 1

Enseco GC/MS

Target Compound Data Summary Sheet

Sample: GEO 4858-06 5ML
Misc : V5 CH14 5ULQC33G
Injected : 11/08/89 01:24 Units: UG/L
Analyst: GREG Run Factor: 1.000
ID File: VOAID5 Surrogate vol: .005
Quant list threshold: 1.00

Surrogate Spike Recoveries

Compound		Surrogate Amount (ug) Spiked	Measured	% Recovery Measured	QC limits
C515	D4-1,2-Dichloroethane	.2500	.2547	102	76 114
C505	D8-Toluene	.2500	.2596	104	88 110
C510	Bromofluorobenzene (BFB)	.2500	.2577	103	86 115

Target Compounds: VOAID5

Scan #	Concentration Quant List UG/L	Sample UG/L		Compound
		BDL	C010	Chloromethane
		BDL	C015	Bromomethane
		BDL	C020	Vinyl Chloride
		BDL	C025	Chloroethane
67	11.178	~~JB~~ 11	C030	Methylene Chloride
76	16.201	R104 ~~16~~ SNG	C035	Acetone
		BDL	C040	Carbon Disulfide
		BDL	C045	1,1-Dichloroethene
		BDL	C050	1,1-Dichloroethane
		BDL	C053	Trans-1,2-Dichloroethene
		BDL	C060	Chloroform
		BDL	C065	1,2-Dichloroethane
153	3.484	SNG ~~3.5~~	C110	2-Butanone
		BDL	C115	1,1,1-Trichloroethane
		BDL	C120	Carbon Tetrachloride
		BDL	C125	Vinyl Acetate
		BDL	C130	Bromodichloromethane
		BDL	C140	1,2-Dichloropropane
		BDL	C143	Cis-1,3-Dichloropropene
		BDL	C150	Trichloroethene
		BDL	C155	Dibromochloromethane
		BDL	C160	1,1,2-Trichloroethane
		BDL	C165	Benzene
		BDL	C172	Trans-1,3-Dichloropropen
		BDL	C175	2-Chloroethylvinylether
		BDL	C180	Bromoform
		BDL	C205	4-Methyl-2-Pentanone

Data file: >GV288 Page: 2
Sample: GEO 4858-06 5ML

Scan #	Concentration Quant list UG/L	Sample UG/L	Compound
	BDL	C210	2-Hexanone
	BDL	C220	Tetrachloroethene
	BDL	C225	1,1,2,2-Tetrachloroethan
	BDL	C230	Toluene
	BDL	C235	Chlorobenzene
	BDL	C240	Ethylbenzene
	BDL	CXXX	Xylene (m)
	BDL	C245	Styrene
	BDL	CXXX	Xylenes (o , p)
	BDL	C250	Xylene (Total)

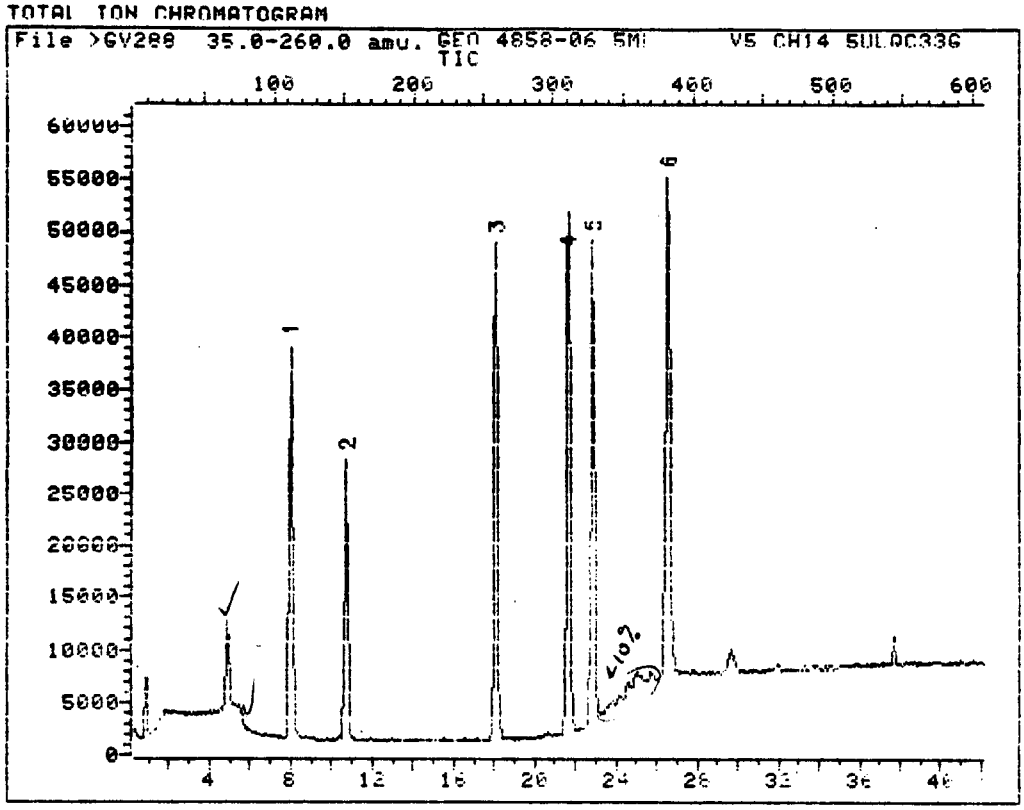
Diagnostic Quant Report

Data File: >GV288::D6 Injected at: 01:24 11/08/89
Quant'd : 02:07 11/08/89
ID File : VOAID5::$$ Calibrated : 19:07 11/07/89

	Compound		- R.T. Info - Pred	Found	Dif	Ion	Area	RF	Conc.
1)	*C101	Bromochloromethane	7.90	7.97	.07	128.0	47005	1.0000	50.00
2)	C010	Chloromethane	1.10	0.00	--	50.0	0	.8690	0.00
3)	C015	Bromomethane	1.72	0.00	--	94.0	0	1.7317	0.00
4)	C020	Vinyl Chloride	2.21	0.00	--	62.0	0	1.2355	0.00
5)	C025	Chloroethane	2.90	0.00	--	64.0	0	1.0142	0.00
6)	C030	Methylene Chloride	4.70	4.87	.17	84.0	21612	2.0581	11.17
7)	C035	Acetone	5.40	5.49	.09	43.0	5841	.3835	16.20
8)	C040	Carbon Disulfide	6.09	0.00	--	76.0	0	3.3511	0.00
9)	C045	1,1-Dichloroethene	7.48	0.00	--	96.0	0	1.3879	0.00
10)	C050	1,1-Dichloroethane	8.73	0.00	--	63.0	0	3.3138	0.00
11)	C053	Trans-1,2-Dichloroe	9.49	0.00	--	96.0	0	1.3261	0.00
12)	C060	Chloroform	10.19	0.00	--	83.0	0	3.4674	0.00
13)	C065	1,2-Dichloroethane	10.88	0.00	--	62.0	0	2.5668	0.00
14)	CS15	D4-1,2-Dichloroetha	10.81	10.72	.09	65.0	111027	2.3181	50.95
15)	*C110	1,4-Difluorobenzene	18.08	18.08	.00	114.0	175023	1.0000	50.00
16)	C110	2-Butanone	10.72	10.79	.07	43.0	2155	.1767	3.48
17)	C115	1,1,1-Trichloroetha	11.96	0.00	--	97.0	0	.6057	0.00
18)	C120	Carbon Tetrachlorid	12.37	0.00	--	117.0	0	.5899	0.00
19)	C125	Vinyl Acetate	12.65	0.00	--	43.0	0	.8644	0.00
20)	C130	Bromodichloromethan	12.99	0.00	--	83.0	0	.7578	0.00
21)	C140	1,2-Dichloropropane	14.23	0.00	--	63.0	0	.4842	0.00
22)	C143	Cis-1,3-Dichloropro	14.57	0.00	--	75.0	0	.6735	0.00
23)	C150	Trichloroethene	15.12	0.00	--	130.0	0	.3983	0.00
24)	C155	Dibromochloromethan	15.74	0.00	--	129.0	0	.5670	0.00
25)	C160	1,1,2-Trichloroetha	15.88	0.00	--	97.0	0	.3409	0.00
26)	C165	Benzene	15.53	0.00	--	78.0	0	.9639	0.00
27)	C172	Trans-1,3-Dichlorop	15.81	0.00	--	75.0	0	.5038	0.00
28)	C175	2-Chloroethylvinyle	16.84	0.00	--	63.0	0	.1137	0.00
29)	C180	Bromoform	18.36	0.00	--	173.0	0	.3735	0.00
30)	*C120	D5-Chlorobenzene	22.83	22.83	.00	117.0	139804	1.0000	50.00
31)	C205	4-Methyl-2-Pentanon	18.77	0.00	--	43.0	0	.4656	0.00
32)	C210	2-Hexanone	20.28	0.00	--	43.0	0	.3015	0.00
33)	C220	Tetrachloroethene	20.63	0.00	--	164.0	0	.4191	0.00
34)	C225	1,1,2,2-Tetrachloro	20.70	0.00	--	83.0	0	.6532	0.00
35)	C230	Toluene	21.80	0.00	--	92.0	0	.7408	0.00
36)	CS05	D8-Toluene	21.66	21.59	.07	98.0	189615	1.3064	51.91
37)	C235	Chlorobenzene	22.97	0.00	--	112.0	0	.9621	0.00
38)	C240	Ethylbenzene	24.69	0.00	--	106.0	0	.4436	0.00
39)	CXXX	Xylene (m)	27.71	0.00	--	106.0	0	.6556	0.00
40)	C245	Styrene	27.51	0.00	--	104.0	0	.9806	0.00
41)	CXXX	Xylenes (o , p)	28.33	0.00	--	106.0	0	.5958	0.00
42)	CS10	Bromofluorobenzene	26.54	26.54	.00	95.0	140754	.9769	51.55
43)	C250	Xylene (Total)	28.33	0.00	--	106.0	0	.6148	0.00

* - Compound is an Internal Standard
D - Compound Qdel'ed

TOTAL ION CHROMATOGRAM

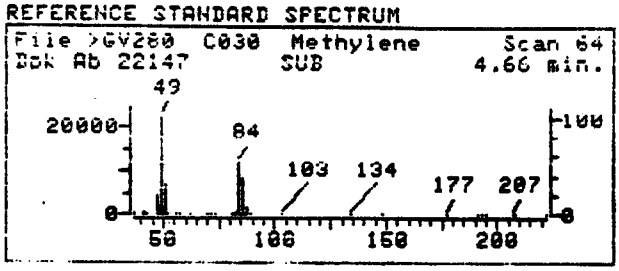


Data File: >GV288::D6 Quant Output File: ^GV288::QO
Name: GEO 4858-06 5ML
Misc: V5 CH14 5ULQC33G

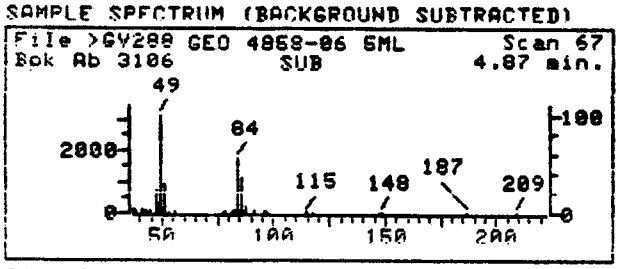
Id File: VOAID5::$$
Title: HSL VOLATILES:8F11%SP1000:45-220@8/MIN:GCMS V5:ERCO/ENSECO
Last Calibration: 891107 19:07

Operator ID: GREG
Quant Time: 891108 02:07
Injected at: 891108 01:24

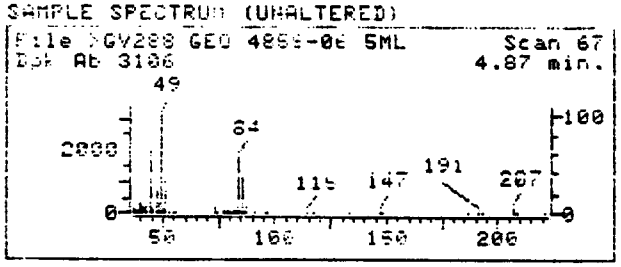
REFERENCE STANDARD SPECTRUM

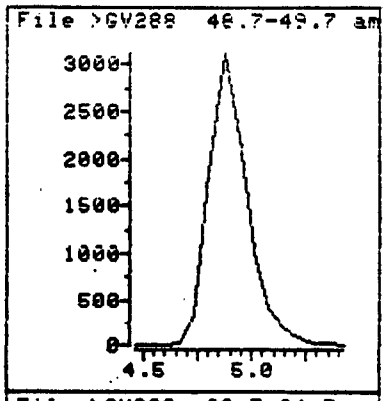


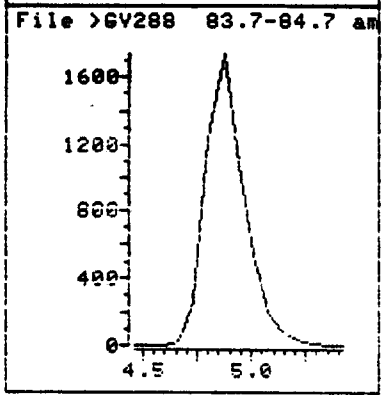
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







Data File: >GV288::D6
Name: GEO 4858-06 5ML
Misc: V5 CH14 5ULQC33G
Quant Time: 891108 02:07
Injected at: 891108 01:24

Quant Output File: ^GV288::QL
Quant ID File: VOAID5::$3
Last Calibration: 891107 19:0

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 67
Retention Time: 4.87 min.
Quant Ion: 84.0
Area: 21612
Concentration: 11.17 ug/L
q-value: 88

Enseco
A CORNING Company

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
004858-0001-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0001-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0002-SA	AQUEOUS	624-A	08 NOV 89-V3A	08 NOV 89-V3A
004858-0002-SA	AQUEOUS	624-A	08 NOV 89-V3A	08 NOV 89-V3A
004858-0003-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0003-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0004-SA	AQUEOUS	624-A	08 NOV 89-V3A	08 NOV 89-V3A
004858-0004-SA	AQUEOUS	624-A	08 NOV 89-V3A	08 NOV 89-V3A
004858-0005-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0005-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0006-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B
004858-0006-SA	AQUEOUS	624-A	06 NOV 89-V5A	07 NOV 89-V5B

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SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 06 NOV 89-V5A QC Run: 07 NOV 89-V5B				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	50.9	102	76-114
Toluene-d8	50.0	49.1	98	61-110
4-Bromofluorobenzene	50.0	51.4	103	74-115
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 08 NOV 89-V3A QC Run: 08 NOV 89-V3A				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	47.5	95	76-114
Toluene-d8	50.0	49.7	99	61-110
4-Bromofluorobenzene	50.0	42.8	86	74-115

Calculations are performed before rounding to avoid round-off errors in calculated results.

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DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
Category: 624-A Matrix: AQUEOUS QC Lot: 06 NOV 89-V5A Concentration Units: ug/L								
1,1-Dichloroethene	50	41.9	44.5	43.2	86	61-145	6.1	14
Trichloroethene	50	44.6	47.2	45.9	92	71-120	5.6	14
Chlorobenzene	50	39.9	41.5	40.7	81	75-130	3.9	13
Toluene	50	45.1	47.2	46.2	92	76-125	4.5	13
Benzene	50	48.4	51.3	49.8	100	76-127	5.8	11
Category: 624-A Matrix: AQUEOUS QC Lot: 08 NOV 89-V3A Concentration Units: ug/L								
1,1-Dichloroethene	50	38.9	34.7	36.8	74	61-145	11	14
Trichloroethene	50	40.1	40.2	40.1	80	71-120	0.4	14
Chlorobenzene	50	39.0	39.2	39.1	78	75-130	0.5	13
Toluene	50	44.6	42.3	43.4	87	76-125	5.2	13
Benzene	50	44.6	43.8	44.2	88	76-127	1.8	11

Calculations are performed before rounding to avoid round-off errors in calculated results.

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METHOD BLANK REPORT
Volatile Organics by GC/MS

Test: 624-TCL-TI
Matrix: AQUEOUS
QC Lot: 06 NOV 89-V5A QC Run: 07 NOV 89-V5B

Analyte	Result	Units	Reporting Limit	
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	14	ug/L	5.0	
Acetone	6.1	ug/L	10	J
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	
Dibromochloromethane	ND	ug/L	5.0	
1,1,2-Trichloroethane	ND	ug/L	5.0	
Benzene	ND	ug/L	5.0	
cis-1,3-Dichloropropene	ND	ug/L	5.0	
Bromoform	ND	ug/L	5.0	
4-Methyl-2-pentanone	ND	ug/L	10	
2-Hexanone	ND	ug/L	10	
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0	
Tetrachloroethene	ND	ug/L	5.0	
Toluene	ND	ug/L	5.0	
Chlorobenzene	ND	ug/L	5.0	
Ethylbenzene	ND	ug/L	5.0	
Styrene	ND	ug/L	5.0	
Xylenes (total)	ND	ug/L	5.0	

J = Result is detected below the reporting limit or is an estimated concentration.

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

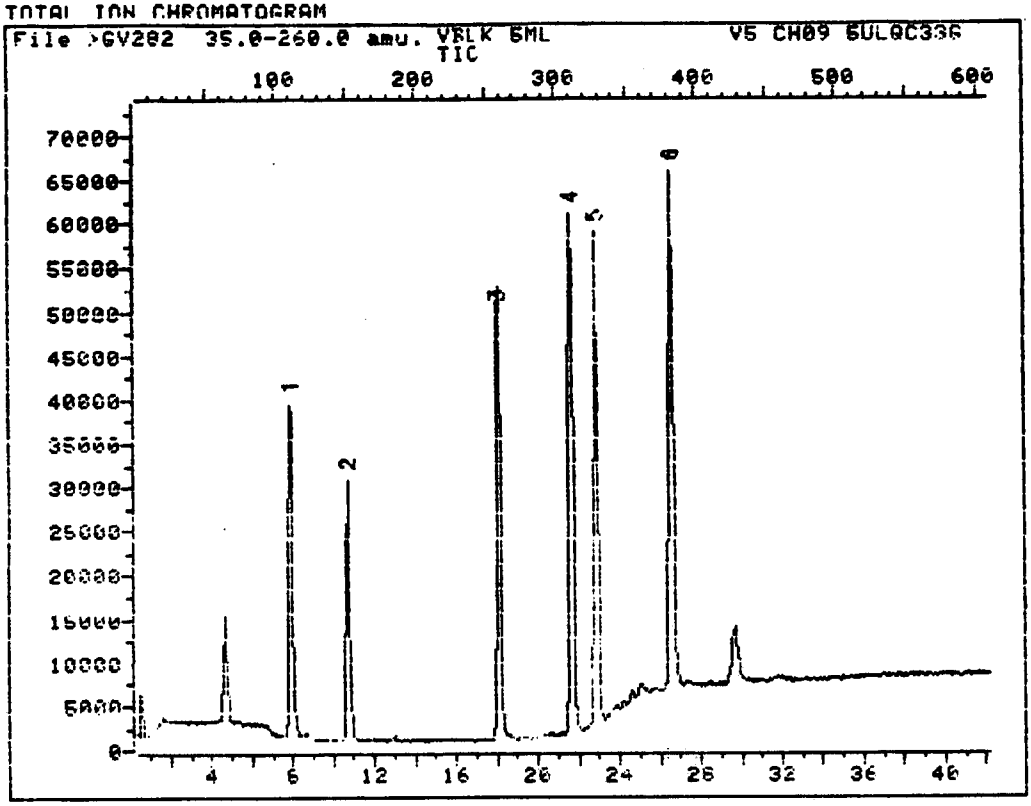
Analyte	Result	Units	Reporting Limit	
Test: 624-TIER-T				
Matrix: AQUEOUS				
QC Lot: 06 NOV 89-V5A QC Run: 07 NOV 89-V5B				
TID Compound 1	ND	ug/L	NA	
TID Compound 2	ND	ug/L	NA	
TID Compound 3	ND	ug/L	NA	
TID Compound 4	ND	ug/L	NA	
TID Compound 5	ND	ug/L	NA	
TID Compound 6	ND	ug/L	NA	
TID Compound 7	ND	ug/L	NA	
TID Compound 8	ND	ug/L	NA	
TID Compound 9	ND	ug/L	NA	
TID Compound 10	ND	ug/L	NA	
TID Compound 11	ND	ug/L	NA	
TID Compound 12	ND	ug/L	NA	
TID Compound 13	ND	ug/L	NA	
TID Compound 14	ND	ug/L	NA	
TID Compound 15	ND	ug/L	NA	
Test: 624-TCL-TI				
Matrix: AQUEOUS				
QC Lot: 08 NOV 89-V3A QC Run: 08 NOV 89-V3A				
Chloromethane	ND	ug/L	10	
Bromomethane	ND	ug/L	10	
Vinyl chloride	ND	ug/L	10	
Chloroethane	ND	ug/L	10	
Methylene chloride	5.4	ug/L	5.0	
Acetone	7.7	ug/L	10	J
Carbon disulfide	ND	ug/L	5.0	
1,1-Dichloroethene	ND	ug/L	5.0	
1,1-Dichloroethane	ND	ug/L	5.0	
1,2-Dichloroethene (total)	ND	ug/L	5.0	
Chloroform	ND	ug/L	5.0	
1,2-Dichloroethane	ND	ug/L	5.0	
2-Butanone	ND	ug/L	10	
1,1,1-Trichloroethane	ND	ug/L	5.0	
Carbon tetrachloride	ND	ug/L	5.0	
Vinyl acetate	ND	ug/L	10	
Bromodichloromethane	ND	ug/L	5.0	
1,2-Dichloropropane	ND	ug/L	5.0	
trans-1,3-Dichloropropene	ND	ug/L	5.0	
Trichloroethene	ND	ug/L	5.0	

J = Result is detected below the reporting limit or is an estimated concentration.

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 624-TCL-TI			
Matrix: AQUEOUS			
QC Lot: 08 NOV 89-V3A QC Run: 08 NOV 89-V3A			
Dibromochloromethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Benzene	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
4-Methyl-2-pentanone	ND	ug/L	10
2-Hexanone	ND	ug/L	10
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Ethylbenzene	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
Xylenes (total)	ND	ug/L	5.0
Test: 624-TIER-T			
Matrix: AQUEOUS			
QC Lot: 08 NOV 89-V3A QC Run: 08 NOV 89-V3A			
TID Compound 1	ND	ug/L	NA
TID Compound 2	ND	ug/L	NA
TID Compound 3	ND	ug/L	NA
TID Compound 4	ND	ug/L	NA
TID Compound 5	ND	ug/L	NA
TID Compound 6	ND	ug/L	NA
TID Compound 7	ND	ug/L	NA
TID Compound 8	ND	ug/L	NA
TID Compound 9	ND	ug/L	NA
TID Compound 10	ND	ug/L	NA
TID Compound 11	ND	ug/L	NA
TID Compound 12	ND	ug/L	NA
TID Compound 13	ND	ug/L	NA
TID Compound 14	ND	ug/L	NA
TID Compound 15	ND	ug/L	NA

TOTAL ION CHROMATOGRAM



Data File: >GV282::D6 Quant Output File: ^GV282::QU
Name: VBLK 5ML
Misc: V5 CH09 5ULQC33G

Id File: VOAID5::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V5:ERCO/ENSECO
Last Calibration: 891107 19:07

Operator ID: GREG
Quant Time: 891107 21:03
Injected at: 891107 20:17

T = 624-A
L = 11/6 V5A
2 = 11/7V5B

QUANT REPORT

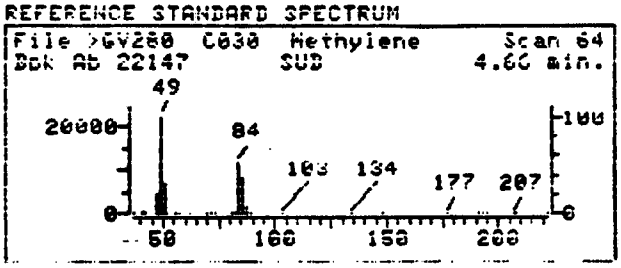
Operator ID: GREG Quant Rev: 6 Quant Time: 891107 21:03
Output File: ^GV282::QU Injected at: 891107 20:17
Data File: >GV282::D6 Dilution Factor: 1.00000
Name: VBLK 5ML
Misc: V5 CH09 5ULQC33G

ID File: VOAID5::$$
Title: HSL VOLATILES:8FT1%SP1000:45-220@8/MIN:GCMS V5:ERCO/ENSECO
Last Calibration: 891107 19:07

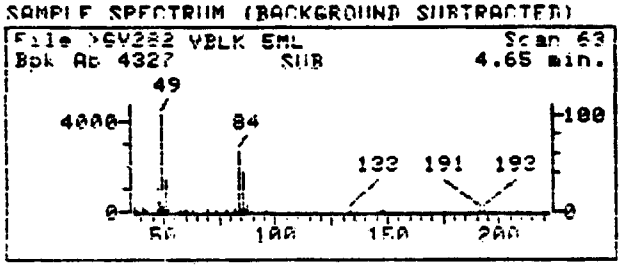
		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*C101	Bromochloromethane	7.89	128.0	52260	50.00	ug/L	59
6)	C030	Methylene Chloride	4.65	84.0	30784	14.31	ug/L	95
7)	C035	Acetone	5.34	43.0	2435	6.07	ug/L	100
14)	C515	D4-1,2-Dichloroethane	10.71	65.0	123366	50.92	ug/L	95
15)	*C110	1,4-Difluorobenzene	18.07	114.0	205369	50.00	ug/L	100
30)	*C120	D5-Chlorobenzene	22.88	117.0	171974	50.00	ug/L	87
36)	C505	D8-Toluene	21.65	98.0	220793	49.14	ug/L	95
42)	C510	Bromofluorobenzene (BFB)	26.60	95.0	172735	51.41	ug/L	62

* Compound is ISTD

REFERENCE STANDARD SPECTRUM



SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



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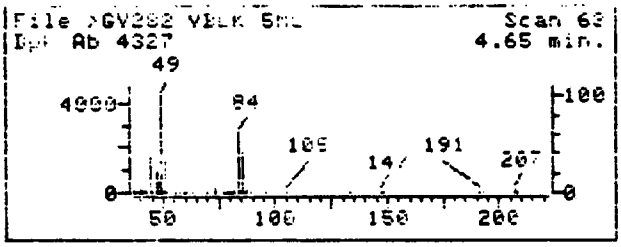
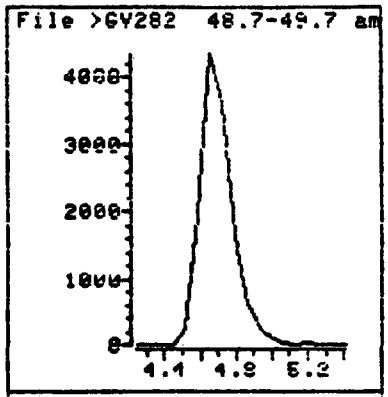
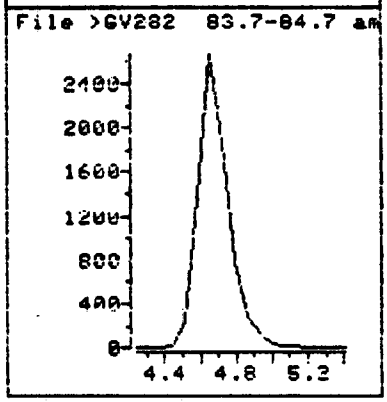


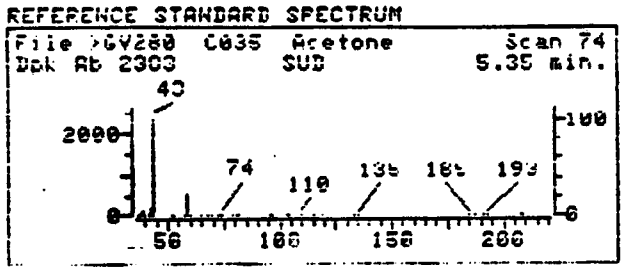




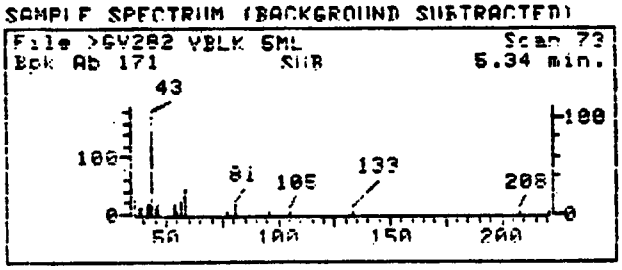
Data File: >GV282::06 Quant Output File: ^GV282::QO
Name: VBLK 5ML
Misc: V5 LH09 5ULQC33G
Quant Time: 891107 21:03 Quant ID File: VOAID5::$$
Injected at: 891107 20:17 Last Calibration: 891107 19:07

Compound No: 6
Compound Name: C030 Methylene Chloride
Scan Number: 63
Retention Time: 4.65 min.
Quant Ion: 84.0
Area: 30784
Concentration: 14.31 ug/L
q-value: 95

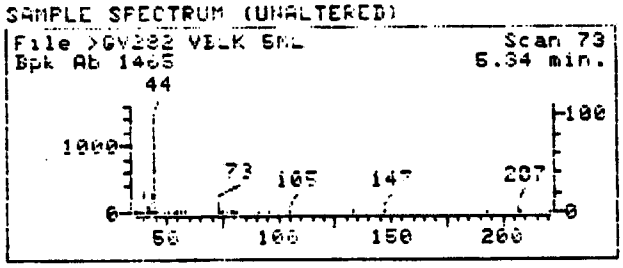
REFERENCE STANDARD SPECTRUM

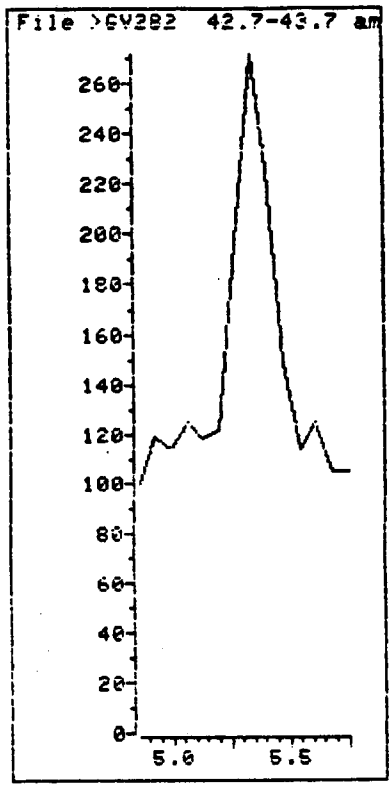


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





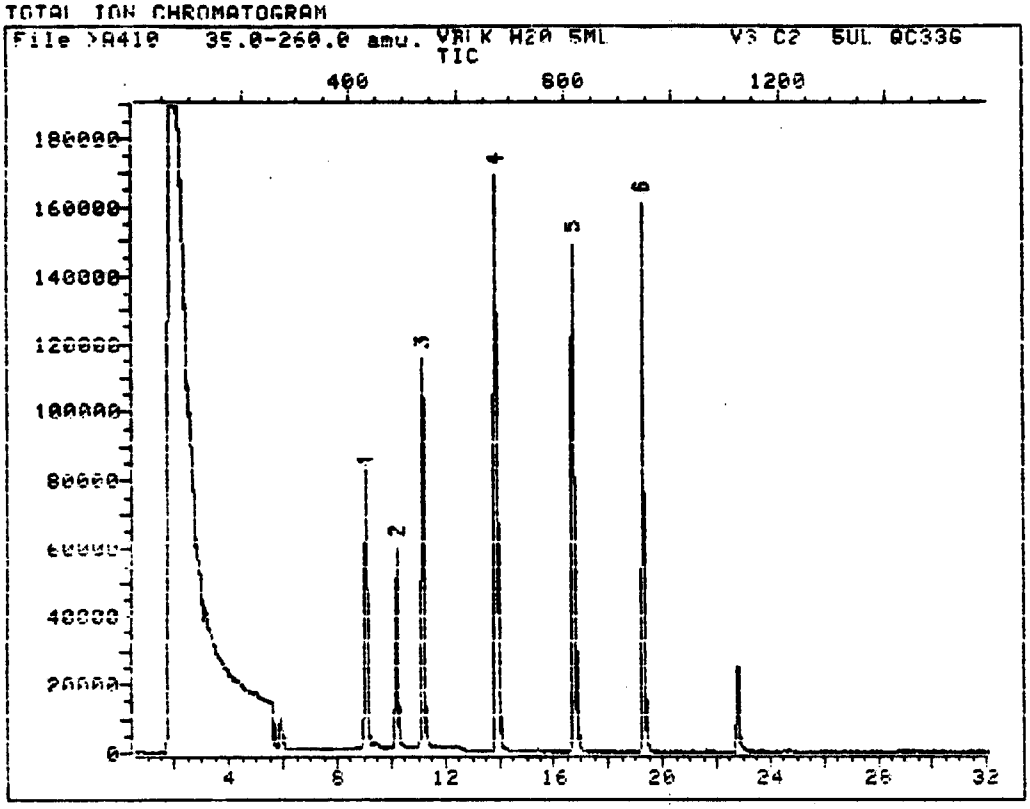
Data File: >GV282::D6
Name: VBLK 5ML
Misc: V5 LH09 5ULQC35G
Quant Time: 891107 21:03
Injected at: 891107 20:17

Quant Output File: ^GV282::QD

Quant ID File: VOA1D5::$$
Last Calibration: 891107 19:07

Compound No: 7
Compound Name: C035 Acetone
Scan Number: 73
Retention Time: 5.34 min.
Quant Ion: 43.0
Area: 2435
Concentration: 6.07 ug/L
q-value: 100

TOTAL ION CHROMATOGRAM



Data File: >A410::D3 Quant Output File: ^A410::WO
Name: VBLK H2O 5ML
Misc: V3 C2 5UL QC33G

Id File: VOA1D3::$$
Title: HSL VOLATILES:30mx.53mm:DB624:V3:ERCO/ENSECO
Last Calibration: 891108 10:52

Operator ID: GREG
Quant Time: 891108 11:54
Injected at: 891108 11:21

L110889V3A

624-A

QUANT REPORT

Operator ID: GREG
Output File: ^A410::QU
Data File: >A410::D3
Name: VBLK H20 5ML
Misc: V3 C2 5UL QC33G

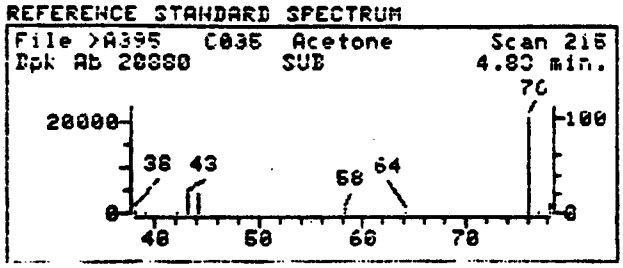
Quant Rev: 6 Quant Time: 891108 11:54
Injected at: 891108 11:21
Dilution Factor: - 1.00000

ID File: VOAID3::$$
Title: HSL VOLATILES:30mx.53mm:DB624:V3:ERCO/ENSECO
Last Calibration: 891108 10:52

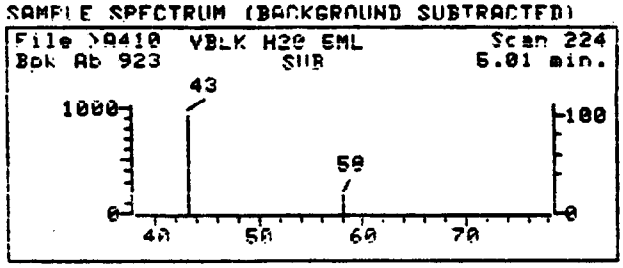
		Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*C101	Bromochloromethane	9.04	128.0	72575	50.00	ug/L	86
2)	C010	Chloromethane	2.29	50.0	2048	~~27~~	ug/L BRL	79
7)	C035	Acetone	5.01	43.0	6583	7.68	ug/L	100
9)	C050	Methylene Chloride	5.90	84.0	13949	5.35	ug/L	96
15)	C515	D4-1,2-Dichloroethane	10.17	65.0	142042	47.46	ug/L	95
16)	*C110	1,4-Difluorobenzene	11.16	114.0	264868	50.00	ug/L	100
30)	*C120	D5-Chlorobenzene	16.72	117.0	267758	50.00	ug/L	100
31)	C505	D8-Toluene	13.88	98.0	370995	49.66	ug/L	95
43)	C510	Bromofluorobenzene (BFB)	19.26	95.0	183860	42.80	ug/L	94

* Compound is ISTD

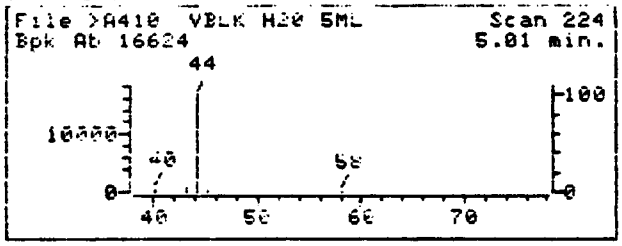
REFERENCE STANDARD SPECTRUM

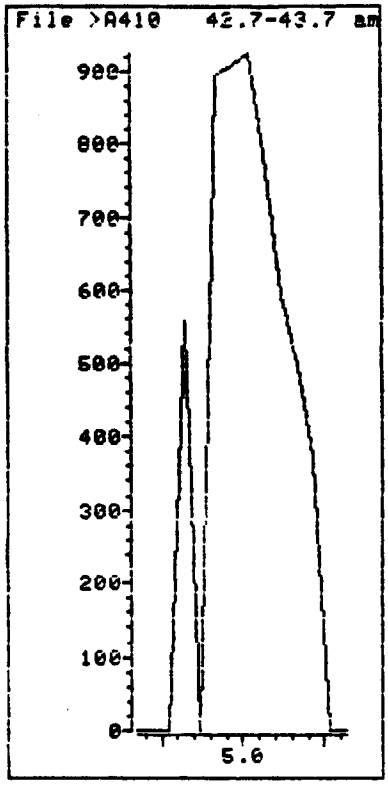


SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)





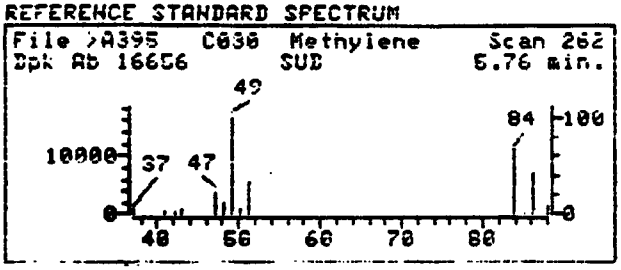
Data File: >A410::D3
Name: VBLK H2O 5ML
Misc: V3 C2 5UL QC33G
Quant Time: 891108 11:54
Injected at: 891108 11:21

Quant Output File: ^A410::QU

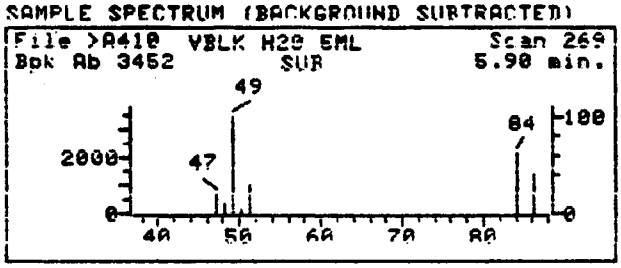
Quant ID File: VOAID3::$$
Last Calibration: 891108 10:52

Compound No: 7
Compound Name: C035 Acetone
Scan Number: 224
Retention Time: 5.01 min.
Quant Ion: 43.0
Area: 6583
Concentration: 7.68 ug/L
q-value: 100

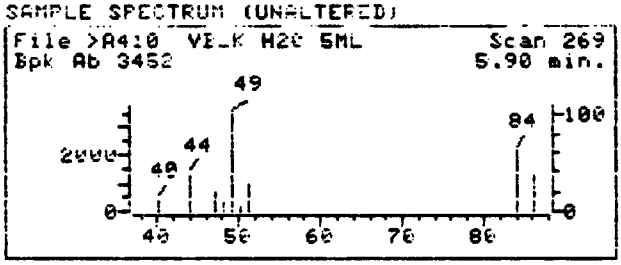
REFERENCE STANDARD SPECTRUM

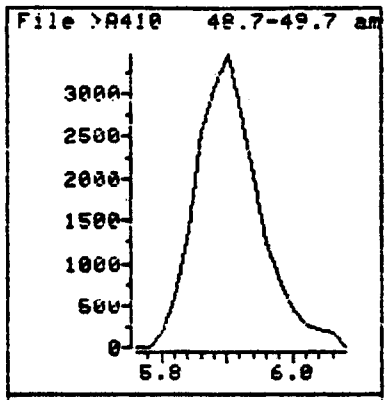


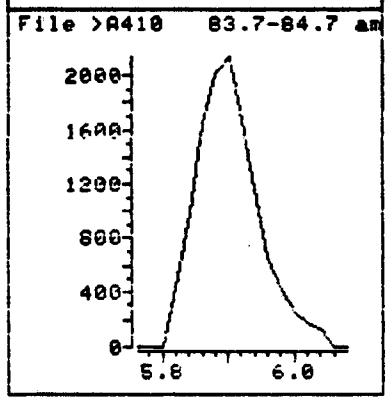
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)



SAMPLE SPECTRUM (UNALTERED)







Data File: >A410::D3 Quant Output File: ^A410::QO
Name: VBLK H2O 5ML
Misc: V5 C2 5UL QC33G
Quant Time: 891108 11:54 Quant ID File: VOA1D3::$$
Injected at: 891108 11:21 Last Calibration: 891108 10:52

Compound No: 9
Compound Name: C030 Methylene Chloride
Scan Number: 269
Retention Time: 5.90 min.
Quant Ion: 84.0
Area: 13949
Concentration: 5.35 ug/L
q-value: 96

Four

Enseco-Erco Laboratory
205 Alewife Brook Parkway
Cambridge, Massachusetts 02138
617/661-3111 Fax: 617/354-5258

CHAIN OF CUSTODY

No. 01040

Attn: Alice LEE

Enseco Client: GeoEngineering (William Dunnell)
Project: LEC - geomorg (GEI # 88072)
Sampling Co.: Aquifer Systems
Sampling Site: LE Carpenter
Team Leader: Suzan DiTanna

SAMPLE SAFE™ CONDITIONS

1. Packed by: Scott Olson Seal #
2. Seal Intact Upon Receipt by Sampling Co.: (Yes) No
3. Condition of Contents: Good
4. Sealed for Shipping by: Scott Olson
5. Initial Contents Temp.: 4 °C Seal #
6. Sampling Status: (Done) Continuing Until
7. Seal Intact Upon Receipt by Laboratory: Yes No
8. Contents Temperature Upon Receipt by Lab: °C
9. Condition of Contents:

Date	Time	Sample ID/Description	Sample Type	No. Containers	Analysis Parameters	Remarks
11/1/89	14:55 ~~LEGM~~	LEC- MW- 1	Aqueous	3	VOA+15 (624)	① TIER II
↓	14:35	-2	↓	3	↓	② No field
	14:20	-3		3		blank because
	14:05	-4		3		of dedicated
	13:45	-5		3		equipment.
↓	—	trip Blank		2		③ Please forward
						results to:
						GeoEngineering
						c/o William Dunnell
						150 Mineral Spring Rd.
						Dover, N.J. 07801
						Thank you

CUSTODY TRANSFERS PRIOR TO SHIPPING

	Relinquished by: (signed)	Received by: (signed)	Date	Time
1	Scott Olson	Sealed Cooler	11/1/89	[illegible]
2			11/2/89	09:00
3				

SHIPPING DETAILS

Delivered to Shipper by: Pick-up
Method of Shipment: Federal express Airbill #
Received for Lab: Eco Signed: [illegible] Date/Time 11/3/89 1020
Enseco Project No.

White and Pink Copies to Lab Yellow to Sampler SS-001 (CM)

Erco Project No.: 4858

Enseco - Erco Laboratory

Client: Geo Engineering

Client Contact: William Dunnell

Program Name: Lec-grandes New ☐ Existing ☐

Client Project No.: GEI # 88072

Duplicate Project No.: _____ With Group Codes Yes ☐ No ☐

Client P.O. No.: _____

Report Copy: _____

1st Client Contact: A. Lee 2nd _____

LIMS Codes

Client: _____

Contact: _____

Billing: _____

Program: _____

Date Received: 11/3/89

Report Date Due: 11/24/89

Date Due to D.C.: _____

No. TA Days: 21/28

Surcharge: _____

Contract Prices: _____

Reporting Format (Please Circle)

CLP Tier I A, B (Tier II A, B) ECPA RCRA

Commercial HSL PP Unknowns Appendix No. ____

Other _____

Paperwork		Samples Rec'd by	Date Rec'd
☒	CSR/TD		
☐	Prep.		
☐	GWQ		
☐	VOA/GC		
☒	VOA/MS	MA	11/6/89
☐	SEA		

Paperwork		Samples Rec'd by	Date Rec'd
☐	Metals		
☐	Pest.		
☐			
☐	MHR		
☐	D.E.O.		
[redacted]			

Logged by: A. Hernandez

Date: 11/3/89 Time: 10:20

Approved by TD/CSR: Alice R. Lee

Date: 11-3-89 Time: 18:00

Comments: _____

Page ___ of ___

Alice 11/6/89

101

LABORATORY CHRONICLE

Date

Receipt/Refrigeration NOVEMBER 3, 1989

ORGANICS EXTRACTION

1. Acids NA
2. Base/Neutrals NA
3. Pesticides/PCBs NA
4. Dioxin NA

ANALYSIS

1. Volatiles 4858-01, -03, on 11/07/89 ; 4858-02, -04 → -06 on 11/08/5
2. Acids NA
3. Base/Neutrals NA
4. Pesticides/PCBs NA
5. Dioxin NA

Section Supervisor Review & Approval C.H / D Contrel 11/20/89

INORGANICS

1. Metals NA
2. Cyanides NA
3. Phenol NA

OTHER ANALYTES

Section Supervisor Review & Approval C.H / DContrel 11/20/89

Quality Control Supervisor Review & Approval Yc / DContrel

If fractions are reextracted and reanalyzed because initial endeavors did not meet quality control acceptance criteria, include dates for both.

Erco Laboratory | Volatile Organics Laboratory | Analysis Log

FRN	Arcv. Tape	Ch. No.	Sample ID	Conc. or Vol.	E.M. Volt	Column Length	Column Type	Analyst	Date	Check if Good Run	Comments
>				SYST	EM	BAK	E				
>GV248			BFB DI.	50ng	2300	6'	1% SP1000		11/5/89	NG QC	Not Used
GV249 >~~GV250~~		9	VSTD050 5µl QC33F	5mL							(CLP)
>											
>						SYS	TEM	BA	KE		VTC 11/6/89
>GV250	Wok		BFB DI.	50ng	2300	6'	1% SP1000		11/6/89	OK QC	146 9:24
>GV251		9	VSTD050 5µl QC33F	5mL							25µl/100mL A+B+C+HSL
>GV252		9	VBLK	5mL						NG QC	leak
>GV253 53		10	LCS w/MTBF 5µl MS17E 5µl MTBE STD	5mL						OK QC	6244A 11/6/89 VSA LTR
>GV254 54		11	LCSD 5µl MS17E	5mL							
>GV255 55		9	VBLK	5mL							
>GV256 56	1 Dis	10	[redacted] 4855-1	500µl						✓	

11/6 (M)

11/10 (3)

Erco Laboratory

Volatile Organics Laboratory

Analysis Log

FRN	Arcv. Tape	Ch. No.	Sample ID	Conc. or Vol.	E.M. Volt	Column Length	Column Type	Analyst	Date	Check if Good Run	Comments
>GV279			BFB DI	50ng	2300	61	190 Sp 1000	VL	11/7/89	✓ QC	17:25 145.
>GV280		15	VST0050 5λQC33F	5ml				VL		✓ QC	CLP
>GV281		15	V BLK H_2O	5ml				VL		NG QC	
>GV282		9	V BLK H_2O	5ml				VL		✓ QC	T=62+-A L=11/6VSA R=11/7V5B
>GV283		9	GEO 4858-1	50λ				VA		✓	
>GV284		10	GEO 4858-2	5ml				VA		NG (500λ)	badchamber xylene over
>GV285		11	GEO 4858-3	50λ				VA		✓	
>GV286		12	GEO 4858-4	5ml				VA		NG 1/4ml	curry (1ml left)
>GV287		13	GEO 4858-5	5ml				VA		✓	
>GV288		14	GEO 4858-4	5ml				VA		✓	
>GV289		15	[redacted] 4848-1	5ml				PC		✓	
>GV290		14	[redacted] 4848-2	5ml				PC		✓	

Ensec

Erco Laboratory | **Volatile Organics Laboratory** | **Analysis Log**

FRN	Arcv. Tape	Ch. No.	Sample ID	Conc. or Vol.	E.M. Volt	Column Length	Column Type	Analyst	Date	Check if Good Run	Comments
A406	VOA 418	1	[redacted] 5J0C336 4843-8	5ML	2600	6'	Mo Sp1000	M	11.7.89	✓	
A407		2	H2O BLK	5ML	↓	↓	↓	M	↓	No good	
						SYS	TEM	BAKE			✓ 11/8/89
A408		1	BFB DI.	5ml		6'	1% Sp1000	NR	11/8/89	QC✓	141 9:16
A409		1	VSTD50 5µl GC 3367	5ML				NR		✓	25µl/100ML A+B+C+HSL
A410	(3)	2	VBLK	5ML				NR		✓	
A411		3	LCS 5µl MS17F	5ML				NR		NG	leak
A412		4	LCSD	5ML				NR		✓	
A413		5	LCSD	5ML				M		✓	
A414		1	GEO 4858 2	500µl				M		✓	
A415		2	GEO 4858 7 dilution	5ML				M		✓	